

# **Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project**

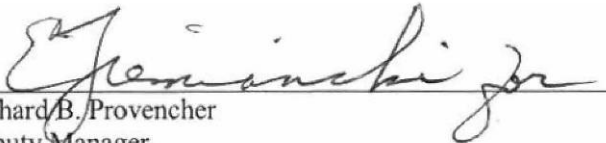
January 2009

# **Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project**

**January 2009**

**Prepared for the  
U.S. Department of Energy  
DOE Idaho Operations Office**

Signature sheet for the Action Memorandum covering general decommissioning activities at the U.S. Department of Energy's Idaho National Laboratory. This action is conducted by the U.S. Department of Energy with the concurrence of the U.S. Environmental Protection Agency and the Idaho Department of Environmental Quality.


  
Richard B. Provencher  
Deputy Manager  
U.S. Department of Energy Idaho Operations Office

10/23/06  
Date





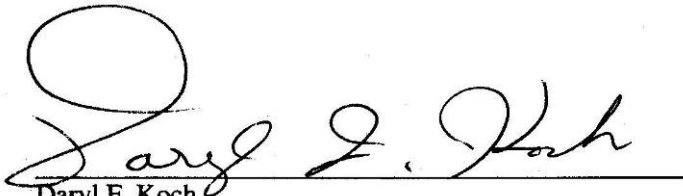
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for Nicholas Ceto  
INL Program Manager  
Region 10  
U.S. Environmental Protection Agency

24 Oct 06  
Date



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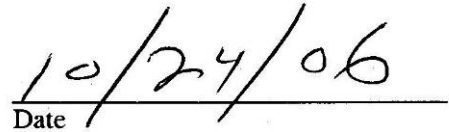
A handwritten signature in black ink, appearing to read "Daryl F. Koch", written over a horizontal line.

Daryl F. Koch

FFA/CO Manager

Waste Management and Remediation Division

Idaho Department of Environmental Quality

A handwritten date "10/24/06" in black ink, written over a horizontal line.

Date



## ABSTRACT

This Action Memorandum, Revision 1, documents the selected alternative to perform general decommissioning activities at the Idaho National Laboratory under the Idaho Cleanup Project. Preparation of this Action Memorandum has been performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.), as amended by the “Superfund Amendments and Reauthorization Act of 1986” (Public Law 99-499), and in accordance with the “National Oil and Hazardous Substances Pollution Contingency Plan” (40 CFR 300). This action is consistent with the joint U.S. Department of Energy and Environmental Protection Agency *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act*, which establishes the CERCLA non-time critical removal action process as an approach for decommissioning. This approach satisfies environmental review requirements and provides for stakeholder involvement, while providing a framework for selecting the decommissioning alternative.

An engineering evaluation/cost analysis was prepared and released for public comment and evaluated alternatives to accomplish the decommissioning of excess buildings and structures whose missions have been completed. The scope of the Action Memorandum is intended to encompass miscellaneous buildings and structures, as well as decommissioning preparatory activities for the more substantial and significant facilities that are being or have been, addressed through separate non-time critical removal actions. Three alternatives were considered for the general decommissioning activities to be performed under the Idaho Cleanup Project: (1) No Action; (2) Removal and Disposal of Buildings, Structures, and Building Contents; and (3) Continued Surveillance and Monitoring Followed by Future Decommissioning. The selected alternative is Alternative 2.



## EXECUTIVE SUMMARY

This Action Memorandum documents the selected alternative to perform general decommissioning activities at the Idaho National Laboratory (INL). Preparation of this Action Memorandum has been performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.), as amended by the “Superfund Amendments and Reauthorization Act of 1986” (Public Law 99-499), and in accordance with the “National Oil and Hazardous Substances Pollution Contingency Plan” (40 CFR 300). This action is consistent with the joint U.S. Department of Energy (DOE) and Environmental Protection Agency (EPA) *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act* (DOE and EPA 1995), which establishes the CERCLA non-time critical removal action process as an approach for decommissioning. This approach satisfies environmental review requirements and provides for stakeholder involvement, while providing a framework for selecting the decommissioning alternative. An Administrative Record has been established to record information used to support the selected alternative and provide documentation of decisions and the progress of the removal action.

An engineering evaluation/cost analysis was prepared and released for public comment and evaluated alternatives to accomplish the decommissioning of excess buildings and structures whose missions have been completed. Comments received during the public comment period were considered for inclusion into the Action Memorandum and are included in Appendix A, *Public Comments Received during the Comment Period*. The scope of the Action Memorandum is intended to encompass miscellaneous buildings and structures, as well as decommissioning preparatory activities for the more substantial and significant facilities that are being or have been addressed through separate non-time critical removal actions. These separate non-time critical removal actions are listed in Section 2.2.1.

Although the general decommissioning of buildings and structures is not specifically addressed in previous Records of Decision (RODs) at INL, this removal action is consistent with the remedial action objectives (RAOs) of previous RODs and supports the overall cleanup objectives established through the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991). Completion of the removal action will place the identified buildings and structures in a condition protective of human health and the environment. The potential contaminants of concern (COCs) that may be encountered during the decommissioning include radionuclides, asbestos, heavy metals, and organic chemicals. Completed comprehensive RODs are available where decommissioning of facilities will occur for Test Area North (TAN), Reactor Technology Complex (RTC), Idaho Nuclear Technology and Engineering Center (INTEC), Central Facilities Area (CFA), Power Burst Facility (PBF), Radioactive Waste Management Complex (RWMC), Naval Reactors Facility (NRF), and Materials and Fuels Complex (MFC). The relevant completed comprehensive waste area group (WAG) RODs are

- *Final Record of Decision for Test Area North Operable Unit 1-10*, DOE/ID-10682, Rev. 0
- *Final Record of Decision Test Reactor Area Operable Unit 2-13*, DOE/ID-10586, and *Explanation of Significant Differences to the Record of Decision for Test Reactor Area Operable Unit 2-13*, DOE/ID-10744, Rev. 0
- *Final Record of Decision Idaho Nuclear Technology and Engineering Center Operable Unit 3-13*, DOE/ID-10660, Rev. 0
- *Final Comprehensive Record of Decision Central Facilities Area Operable Unit 4-13*, DOE/ID-10719, Rev. 2

- *Record of Decision for the Power Burst Facility and Auxiliary Reactor Area, Operable Unit 5-12, DOE/ID-10700*
- *Record of Decision for Radioactive Waste Management Complex Operable Unit 7-13/14, DOE/ID-11359*
- *Final Record of Decision Naval Reactors Facility Operable Unit 8-08, Document ID 10544*
- *Final Record of Decision Argonne National Laboratory-West Operable Unit 9-04, W7500-000-ES 04.*

Three alternatives were considered for the general decommissioning activities to be performed: (1) No Action; (2) Removal and Disposal of Buildings, Structures, and Building Contents; and (3) Continued Surveillance and Monitoring Followed by Future Decommissioning. The selected removal action alternative is Alternative 2 (Removal and Disposal of Buildings, Structures, and Building Contents). When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho Hazardous Waste Management Act/Resource Conservation and Recovery Act (HWMA/RCRA), these wastes would be addressed pursuant to requirements of those regulations. The scope of the selected alternative is intended to encompass remaining miscellaneous decommissioning actions. The scope will further include decommissioning preparatory activities (for example, isolation of utilities, chemical removal, removal of piping and equipment) for the more substantial and significant facilities that are being or have been addressed through separate non-time critical removal actions. This Action Memorandum excludes the scope addressed by these separate non-time critical removal actions and remedial actions conducted pursuant to the Federal Facility Agreement and Consent Order. Building contents include, but are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The types of wastes and debris likely to require disposal include, but are not limited to, solid waste, low-level radioactive waste, asbestos waste, and polychlorinated biphenyl (PCB) -contaminated waste.

Wastes generated through implementation of the selected alternative will be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the Waste Acceptance Criteria (WAC) of those facilities. For contaminated wastes generated during the decommissioning, the Idaho CERCLA Disposal Facility (ICDF) will be the preferred disposal location for wastes meeting the ICDF WAC. Demolition of building and structures will include removal of abovegrade structures. Belowgrade structures will be removed and disposed of in the same fashion as abovegrade buildings and structures. However, if belowgrade structures (including pipes and utility systems) are not contaminated or may be decontaminated to achieve RAOs and meet release criteria, they will optionally be left in place, backfilled, and brought to grade. Backfill will consist of clean fill materials and/or inert demolition waste from the abovegrade structures. If evidence of contamination to surrounding soils is encountered, those soils exceeding the RAOs will be excavated and disposed of at an appropriate on-Site or off-Site disposal facility in accordance with the WAC of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, the site may be identified by the Department of Energy Idaho Operations Office as a new site under the Federal Facility Agreement and Consent Order, with concurrence by the Idaho Department of Environmental Quality (DEQ) and EPA.

The engineering evaluation and cost analysis, and the original version of the Action Memorandum, recognized that some buildings or structures slated for decommissioning may be found to be unsuitable for inclusion within the NTCRA or may find unforeseen future uses prior to performing the demolition. When this occurs and eliminating the facility from the list identified in Table 1 is appropriate, concurrence from the Idaho DEQ and EPA will first be obtained, and a letter will be placed in the Administrative Record for this NTCRA identifying the building or structure and explaining why it is no



longer appropriate for inclusion under the scope of the NTCRA. Furthermore, the Idaho Cleanup Project may be asked to decommission other INL buildings and structures with similar characteristics, contaminants, and complexity to those specifically identified in Section 2.1.10, Table 1. This Action Memorandum intends to allow the potential future inclusion of such buildings and structures under the scope of this NTCRA, as appropriate. If additional buildings and structures are added to the list in Table 1, concurrence from DEQ and EPA will first be obtained, and a letter will be placed in the Administrative Record for this NTCRA identifying the building or structure and explaining why it is sufficiently similar to the facilities in Table 1. This revision (Revision 1) to the Action Memorandum identifies four facilities that have previously been added using the process noted above, and additionally, includes eight more facilities that meet the criteria for inclusion. The four facilities previously added are: CPP-648, Tank Vault Building; TRA-613, Weather Enclosure; TRA-761, Tank Truck Loading Facility; and NRF-18A, S1W Spray Pond #1. The eight facilities being added through approval of Revision 1 of the Action Memorandum are: TRA-613A, Pump Vault and Equipment; TRA-613B, Pump Vault and Equipment; TRA-713B, Hot Waste Tank; TRA-713C, Hot Waste Tank; TRA-713D, Hot Waste Tank; TRA-730, Catch Tanks Vault; MFC-774, Zero Power Physics Reactor Control Room; and MFC-776, Zero Power Physics Reactor Cell.



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## ACRONYMS

ACHP	Advisory Council on Historic Preservation
ANL-W	Argonne National Laboratory-West
ARAR	applicable or relevant and appropriate requirement
ATR	Advanced Test Reactor
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Central Facilities Area
CFR	<i>Code of Federal Regulations</i>
CITRC	Critical Infrastructure Test Range Complex
COC	contaminant of concern
CRMP	Cultural Resources Management Plan
CTF	Contained Test Facility
DEQ	(Idaho) Department of Environmental Quality
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office
EBR-II	Experimental Breeder Reactor II
ECF	Expended Core Facility
EE/CA	engineering evaluation/cost analysis
EPA	Environmental Protection Agency
ETR	Engineering Test Reactor
FFA/CO	Federal Facility Agreement and Consent Order
HEPA	high-efficiency particulate air (filter)
HWMA	Hazardous Waste Management Act
ICDF	Idaho CERCLA Disposal Facility
IDAPA	Idaho Administrative Procedures Act
INEEL	Idaho National Engineering and Environmental Laboratory
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
LOFT	Loss-of-Fluid Test

MFC	Materials and Fuels Complex
MTR	Materials Testing Reactor
NRF	Naval Reactors Facility
NHPA	National Historic Preservation Act
OU	operable unit
PBF	Power Burst Facility
PCB	polychlorinated biphenyl
RAO	remedial action objective/removal action objective
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RTC	Reactor Technology Complex
RWMC	Radioactive Waste Management Complex
S&M	surveillance and monitoring
SHPO	State Historic Preservation Officer
SMC	Specific Manufacturing Capability
SPERT	Special Power Excursion Reactor Test
SRPA	Snake River Plain Aquifer
TAN	Test Area North
TBC	to be considered
TRA	Test Reactor Area
TREAT	Transient Reactor Test
TSF	Technical Support Facility
USC	<i>United States Code</i>
VCO	Voluntary Consent Order
WAC	Waste Acceptance Criteria
WAG	waste area group
ZPPR	Zero Power Physics Reactor



# **Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project**

## **1. STATEMENT OF BASIS AND PURPOSE**

This Action Memorandum documents the selection of the recommended alternative (Alternative 2, Removal and Disposal of Buildings, Structures, and Building Contents) as identified in the *Engineering Evaluation/Cost Analysis for General Decommissioning Activities under the Idaho Cleanup Project* (DOE-ID 2006a). The Action Memorandum has been prepared in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.), as amended by the “Superfund Amendments and Reauthorization Act of 1986” (Public Law 99-499), and the “National Oil and Hazardous Substances Pollution Contingency Plan” (40 CFR 300). Although the general decommissioning of buildings and structures is not specifically addressed in previous Records of Decision (RODs) at the Idaho National Laboratory (INL), this removal action is consistent with the remedial action objectives (RAOs) of previous RODs and supports the overall cleanup objectives established through the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991). This action is also consistent with the joint Department of Energy (DOE) and Environmental Protection Agency (EPA) *Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (DOE and EPA 1995), which establishes the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) non-time critical removal action process as an approach for decommissioning.

The scope of the removal action is intended to encompass demolition of miscellaneous buildings and structures, as well as decommissioning preparatory activities (for example, isolation of utilities, chemical removal, removal of piping and equipment) for the more substantial and significant facilities that are being or have been addressed through separate non-time critical removal actions. This Action Memorandum excludes the scope addressed by these separate non-time critical removal actions (listed in Section 2.2.1) and remedial actions conducted pursuant to the Federal Facility Agreement and Consent Order.

Some buildings or structures slated for decommissioning may be found to be unsuitable for inclusion within the NTCRA or may find unforeseen future uses prior to performing the demolition. If this occurs and eliminating the facility from the list identified in Table 1 is appropriate, concurrence from the Idaho Department of Environmental Quality (DEQ) and EPA will first be obtained, and a letter will be placed in the Administrative Record for this NTCRA identifying the building or structure and explaining why it is no longer appropriate for inclusion under the scope of the NTCRA. Furthermore, the Idaho Cleanup Project may be asked to decommission other INL buildings and structures with similar characteristics, contaminants, and complexity to those specifically identified in Section 2.1.10, Table 1. This Action Memorandum intends to allow the potential future inclusion of such buildings and structures under the scope of this NTCRA, as appropriate. If additional buildings and structures are added to the list in Table 1, concurrence from DEQ and EPA will first be obtained, and a letter will be placed in the Administrative Record for this NTCRA identifying the building or structure and explaining why it is sufficiently similar to the facilities specifically identified in this Action Memorandum and appropriate for inclusion under the scope of the NTCRA.

This NTCRA is intended to simplify administrative processes for management of wastes generated during decommissioning. The types of wastes typically generated during decommissioning include, but

are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The typical classifications of these wastes and debris likely to require disposal include, but are not limited to, solid waste, low-level radioactive waste, asbestos waste, and polychlorinated biphenyl (PCB) -contaminated waste. Wastes generated through implementation of this NTCRA will be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the Waste Acceptance Criteria (WAC) of those facilities.

The Idaho CERCLA Disposal Facility (ICDF) is the preferred disposal location for wastes meeting the ICDF WAC (DOE-ID 2008a). For wastes eligible for disposal as solid wastes, the INTEC CERCLA Demolition Waste Landfill or the Central Facilities Area (CFA) Industrial Waste Landfill will be utilized. When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho Hazardous Waste Management Act/Resource Conservation and Recovery Act (HWMA/RCRA), these wastes will be addressed pursuant to requirements of those regulations. If evidence of contamination to surrounding soils is encountered, those soils exceeding the remedial action objectives (RAOs) may be excavated and disposed of at an appropriate on-Site or off-Site disposal facility in accordance with the WAC of the facility. Section 4.2 further discusses the RAOs for this removal action. Alternatively, if the soil contamination is extensive, or unusually complex, the site may be identified by the Department of Energy Idaho Operations Office (DOE-ID) as a new site under the *Federal Facility Agreement and Consent Order* (DOE-ID 1991), with concurrence by the DEQ and EPA. If a site is included under the FFA/CO, the site would be subject to further investigation and a subsequent response action as necessary under the FFA/CO.

Performance of this removal action will place the facilities in a configuration that is protective of human health and the environment. Without decommissioning of these buildings and structures, a potential threat of release of hazardous substances exists, and, without action, adverse threats to human health and the environment eventually could occur. As the lead agency, DOE has determined that a removal action is an appropriate means to accomplish the final end state and achieve environmental review requirements. Both the DEQ and the EPA concur that a NTCRA is warranted to place these excess facilities in a configuration that is protective of human health and the environment.

## **2. BACKGROUND AND FACILITY DESCRIPTIONS**

This section provides summary background information and a description of the areas at the INL Site where decommissioning activities will occur. This section identifies previous and ongoing closure and cleanup activities, including a description of the buildings and structures that are addressed in this Action Memorandum and additional information relevant to the scope of this NTCRA. This section also provides a summary of the radiological and nonradiological contaminants of concern (COCs) likely to be encountered while conducting the decommissioning.

### **2.1 Site Description and Background**

#### **2.1.1 Idaho National Laboratory Site and Idaho Cleanup Project**

The INL Site, managed by DOE, is located 51 km (32 mi) west of Idaho Falls, Idaho (Figure 1). The INL Site occupies 2,305 km<sup>2</sup> (890 mi<sup>2</sup>) of the northeastern portion of the Eastern Snake River Plain.

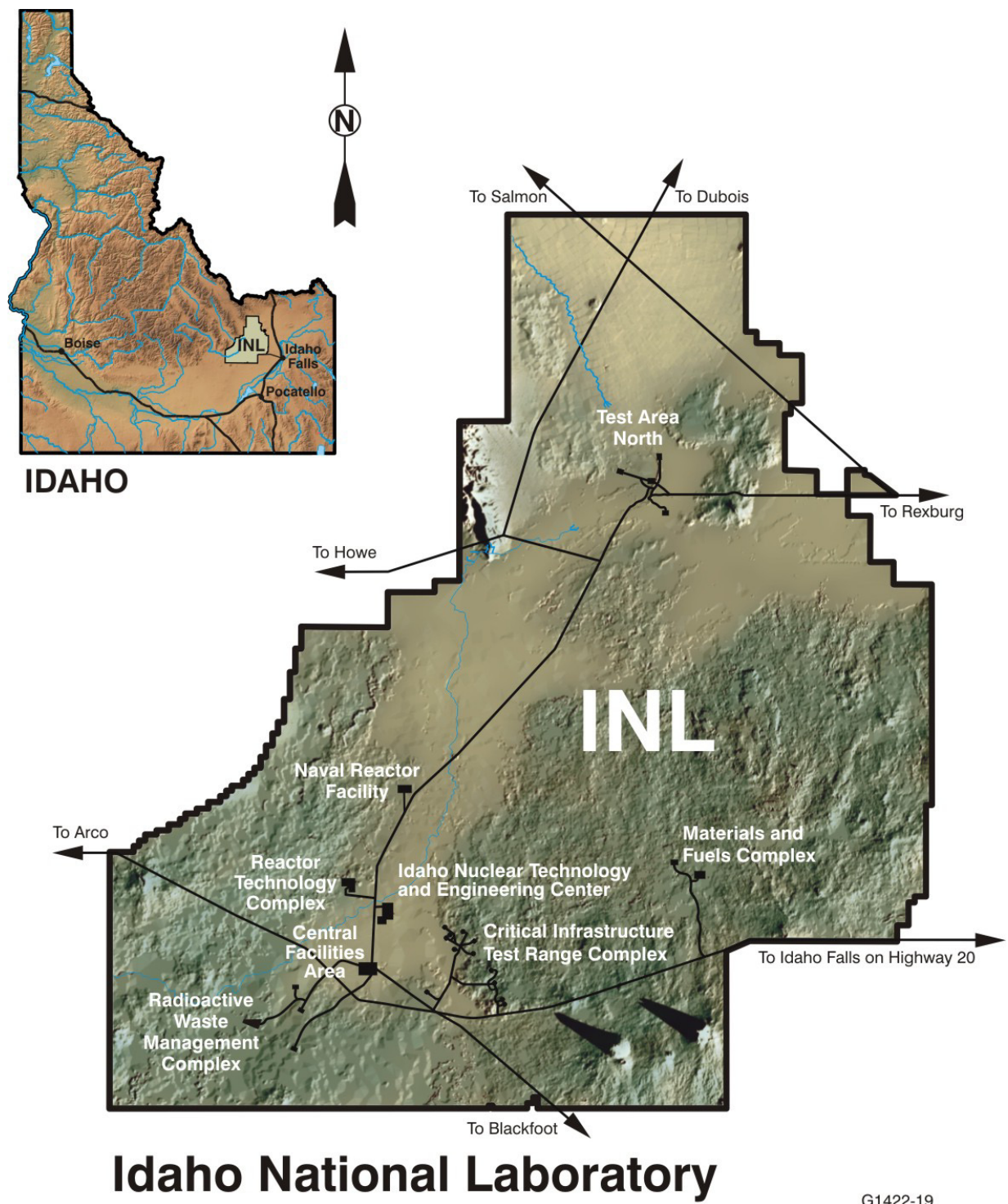


Figure 1. Map of the Idaho National Laboratory Site showing the location of major facilities.

In 1949, the U.S. Atomic Energy Commission established the INL Site, which was called the National Reactor Testing Station at that time. Its purpose was to conduct nuclear energy research and related activities. It was redesignated the Idaho National Engineering Laboratory in 1974 and then the Idaho National Engineering and Environmental Laboratory (INEEL) in 1997. In 2005, to better focus the laboratory's missions, DOE established the Idaho Cleanup Project to bring the environmental management mission to completion and redesignated the site as the INL to better reflect the laboratory's new research directions.

DOE-ID controls all land within the INL Site. Public access is restricted to public highways, DOE-ID sponsored tours, special-use permits, and the Experimental Breeder Reactor I National Historic Landmark. In addition, DOE-ID supports the Shoshone-Bannock tribal members' need for access to areas on the INL Site for cultural and religious purposes.

The INL Site is located primarily in Butte County; however, it also occupies portions of Bingham, Bonneville, Clark, and Jefferson counties. The 2000 census indicated the following populations (in parentheses) for cities in the region: Idaho Falls (50,730), Pocatello (51,466), Blackfoot (10,419), Arco (1,026), and Atomic City (25). Surface water flows on the INL Site consist mainly of three streams draining intermountain valleys to the north and northwest of the INL Site: (1) the Big Lost River, (2) the Little Lost River, and (3) Birch Creek. All of the channels terminate on the INL Site. Flows from Birch Creek and the Little Lost River seldom reach the INL Site because of irrigation withdrawals upstream. The Big Lost River and Birch Creek may flow onto the INL Site before the irrigation season or during high-water years, but the terminal reaches are usually dry. In those few wetter years when the Big Lost River carries water to the end of its channel, the water sinks into the ground.

The physical characteristics, climate, flora and fauna, demography, and cultural resources of the INL area are further described in the following documents:

- *Final Record of Decision for Test Area North Operable Unit 1-10*, DOE/ID-10682 (DOE-ID 1999a)
- *Final Record of Decision Test Reactor Area Operable Unit 2-13*, DOE/ID-10586 (DOE-ID 1997), and *Explanation of Significant Differences to the Record of Decision for Test Reactor Area Operable Unit 2-13*, DOE/ID-10744 (DOE-ID 2000a)
- *Final Record of Decision Idaho Nuclear Technology and Engineering Center Operable Unit 3-13*, DOE/ID-10660 (DOE-ID 1999b)
- *Final Comprehensive Record of Decision for Central Facilities Area Operable Unit 4-13*, DOE/ID-10719 (DOE-ID 2000b)
- *Record of Decision for the Power Burst Facility and Auxiliary Reactor Area, Operable Unit 5-12*, DOE/ID-10700 (DOE-ID 2000c)
- *Record of Decision for Radioactive Waste Management Complex Operable Unit 7-13/14*, DOE/ID-11359 (DOE-ID 2008b)
- *Final Record of Decision Naval Reactors Facility Operable Unit 8-08*, Document ID 10544 (DOE-IBO 1998)
- *Final Record of Decision Argonne National Laboratory-West Operable Unit 9-04*, W7500-000-ES-04 (DOE-CH 1998).

### **2.1.2 Test Area North**

Located in the northern portion of the INL Site, the original mission of TAN was to support the U.S. Air Force in its efforts to create a nuclear-powered airplane, beginning in 1954. Although the Air Force project was terminated in 1961, the project and others after it resulted in the development of four subareas at TAN: the Initial Engine Test Facility (decommissioned in 2001), the Water Reactor Research Test Facility (decommissioned in 2004), the Technical Support Facility (currently undergoing decommissioning), and the Contained Test Facility (CTF). The U.S. Army selected the TAN CTF as the site for their Specific Manufacturing Capability (SMC) program, which continues to produce armor for combat vehicles.

### **2.1.3 Reactor Technology Complex**

The Reactor Technology Complex (RTC), formerly known as the Test Reactor Area (TRA), has served to house high-neutron-flux nuclear reactors and to test the effect of irradiation upon materials, fuels, and equipment. It is located in the south-central portion of the INL Site. The complex was established in the early 1950s with the development of the Materials Testing Reactor (MTR) (which is located in the TRA-603 building). Two other major reactors followed: the Engineering Test Reactor (ETR) (which is located in the TRA-642 building) and the Advanced Test Reactor (ATR) (which is located in TRA-670). Removal of the fuel rods from MTR and ETR began soon after reactor operations ceased, in 1970 and 1981, respectively. Only the ATR is currently operational.

### **2.1.4 Idaho Nuclear Technology and Engineering Center**

Situated in the south-central portion of the INL Site, the Idaho Nuclear Technology and Engineering Center (INTEC) began receiving, storing, and reprocessing nuclear materials in 1953. Historically, INTEC has been a uranium reprocessing facility for irradiated nuclear fuel from test, defense, and research reactors in the United States and other countries. After fuel dissolution and extraction, high-level liquid waste was stored in stainless steel underground tanks in the tank farm. The high-level liquid waste was calcined, and the resultant granular solids (calcine) were stored in stainless steel bins encased in thick concrete vaults. In 1992, DOE announced that the reprocessing component of the INTEC mission would be phased out. This decision led to the phaseout of all related processes at INTEC. Other missions have included research, storage of spent nuclear fuel, and waste management.

### **2.1.5 Central Facilities Area**

Located in the south-central portion of the INL Site, CFA has been used since 1949 to house many of the support services for all of the operations at the INL Site. Functions housed at CFA include laboratories, security operations, fire protection, a medical facility, communication systems, warehouses, a cafeteria, vehicle and equipment pools, and the bus system.

### **2.1.6 Power Burst Facility/Critical Infrastructure Test Range Complex**

The Power Burst Facility (PBF), designated Building PER-620, is located within the Critical Infrastructure Test Range Complex (CITRC). The complex was originally developed in the late 1950s as the Special Power Excursion Reactor Test (SPERT) area, which was comprised of four light-water reactors and a control area. The first reactor, SPERT-I, was decontaminated and decommissioned in the late 1960s and replaced by the PBF reactor in 1970. The Waste Reduction Operations Complex program subsequently took over the empty SPERT-II, -III, and -IV buildings and the PBF Control Area and used them for treatment, storage, and recycling of radioactive, hazardous, mixed, and industrial/commercial

waste. Operation of the Waste Reduction Operations Complex officially terminated June 3, 2004, and the area's facilities were turned over to national security programs for new missions.

By the mid-1980s, the PBF reactor had been shut down and placed in standby condition. Non-time critical removal actions at PBF have been implemented through the *Action Memorandum for Phase 1 of the Decommissioning of the Power Burst Reactor Building (PER-620)* (DOE-NE-ID 2005a) and the *Action Memorandum for Power Burst Facility Final End-State and PBF Vessel Disposal* (DOE-ID 2007a).

### **2.1.7 Radioactive Waste Management Complex**

RWMC is located in the southwestern corner of the INL Site. The facility encompasses a total of 177 acres and is divided into three separate areas by function: the Subsurface Disposal Area (97 acres), the Transuranic Storage Area (58 acres), and the Administration area (22 acres). The mission of the facility from 1952 to 1970 was to manage disposal of radioactive waste. Since 1970, the mission has been to dispose of low-level waste and to store, treat, and prepare stored transuranic waste for off-Site shipment and disposal (Litus and Shea 2005). Recent construction of the Advanced Mixed Waste Treatment Project expanded the RWMC's waste management operations to include treating and preparing the 62,000 m<sup>3</sup> of stored transuranic waste for shipment out of Idaho. An accelerated retrieval project is currently under way in the Subsurface Disposal Area to remove targeted waste (graphite, filters, Series 741, 742, and 743 sludge, and uranium roaster oxides). The accelerated retrieval was initiated as a series of NTRCAs. With the September 2008 signing of the *Record of Decision for Radioactive Waste Management Complex Operable Unit 7-13/14* (DOE-ID 2008b), the targeted waste retrieval is being completed as a remedial action under the Record of Decision.

### **2.1.8 Naval Reactors Facility**

NRF is located on the west-central side of INL. NRF was established in 1949 as a testing site for the Naval Nuclear Propulsion Program. NRF covers 7 mi<sup>2</sup>, of which 80 acres are developed. NRF consists of three inactivated naval nuclear reactor prototype plants, the Expanded Core Facility (ECF), and miscellaneous support buildings. Construction of the Submarine Thermal Reactor Prototype (S1W) at NRF began in 1951. The prototype completed operation in 1989. The Large Ship Reactor Prototype (A1W) was constructed in 1958 and completed operation in January 1994. The Submarine Reactor Plant Prototype (S5G) was constructed in 1965 and completed operations in May 1996. The prototypes were used to train sailors for the nuclear navy and for research and development purposes. The ECF, which receives, inspects, and conducts research on naval nuclear fuel, was initially constructed in 1958 and is still in operation. NRF also prepares spent naval nuclear fuel for dry storage.

### **2.1.9 Materials and Fuels Complex**

MFC, formerly known as Argonne National Laboratory-West, was established in 1949. It is located on the eastern portion of the INL site and is approximately 28 miles west of Idaho Falls, Idaho. The historical mission of the complex was the design and demonstration of power production reactors. Some of the facilities at MFC that played a role in reactor design include the Transient Reactor Test facility (TREAT), the Experimental Breeder Reactor II (EBR-II), and the Zero Power Physics Reactor (ZPPR). TREAT was used for testing the performance of materials in a nuclear reactor, especially during power excursions. EBR-II operated for 30 years, providing power and serving as a point of research for reactor development and testing. The ZPPR facility was used to test reactor design features for different fuel materials and configurations. Current missions at MFC include support and research for the Global Nuclear Energy Partnership, Advanced Fuel Cycle Initiative. Research and production of radioisotope thermoelectric generators is also conducted to support the nation's space missions.

**2.1.9.1 Zero Power Physics Reactor Equipment.** ZPPR is an ultra-low-power critical facility located at MFC. The facility was operational from 1969 through 1992. The objectives of the ZPPR deactivation project are to remove and dispose of the ZPPR and related ancillary equipment, so the buildings can be utilized for future missions. Specifically, the project will remove the ZPPR core support tubes, core frame, support tables and bed, ventilation components (plenums, fans, and ducting), drive motors, shield walls, center platform, and motorized loading machine. Additionally, the related electrical controls, instrument panels and all associated cabling and wiring will be removed and disposed of. The estimated volume and mass is 182 m<sup>3</sup> and 420,000 kg, respectively.

The ZPPR was an experimental facility designed to study the near-zero-power nuclear physics characteristics of a variety of fissile materials and other core material components. At these ultra-low power levels (approximately 100 W at full power, equivalent to a typical light bulb) activation product generation was below measureable levels. The minute generation of fission products remained within the encased test plates, which have been removed. The reactor core architecture is comprised of two mirror-image 14-ft × 14-ft vertically tiered square honeycomb arrays (having a matrix of 77 tubes wide by 77 tubes high). One array was fixed and the other moveable. The fissile test components were loaded into deep horizontal drawers which were slid into the matrix tubes. The experiments consisted of placing small steel-encapsulated uranium (enriched uranium and depleted uranium) and/or plutonium plates into the drawers of one array representing half the reactor core. The other array was loaded with the other half of the core. The moveable array then closed on the fixed array bring the two core halves together. These near-zero-power subcritical core test durations were short (i.e., hours); therefore, very little, if any, activation product was generated. The ZPPR is differentiated from other test reactors at the INL, in that it was air-cooled rather than water- or liquid-metal-cooled, resulting in far fewer components and surfaces with the potential for contamination.

A comparatively minor amount of surface contamination is present on some ZPPR equipment. The estimated total radiological source term for the ZPPR equipment is 9.5E-05 Ci. The COCs are U-234 (7.3E-07 Ci), U-235 (2.4E-05 Ci), U-238 (1.9E-06), Cs-137 (4.1E-05 Ci), Sr-90 (2.1E-10 Ci), and Y-90 (2.1E-10 Ci) (Adams 2008). Because of the ultra-low power history, air-cooled components, and comparatively low radiological source term, the ZPPR equipment is similar in characteristics, contaminants, and complexity to other contaminated equipment, such as pumps and piping, included within this Action Memorandum. It is dissimilar to other high-risk reactor vessels being excluded from end-state and vessel disposal under this Action Memorandum because the radiological source term is many orders of magnitude smaller and the end-state of the facility will not be defined until the future missions of the buildings are completed.

## **2.1.10 Buildings and Structures Identified for General Decommissioning**

Table 1 lists the buildings and structures currently identified for general decommissioning under this non-time critical removal action. Figures 2 through 9 are area maps showing small facilities (in yellow) and major facilities (in red). Some of these buildings currently house offices or are utilized for equipment and materials storage. Occupants, equipment, and materials may need to be relocated prior to decommissioning. As discussed in Section 1, if new information arises during the decommissioning or the inclusion of additional facilities is deemed appropriate, the list may be modified, with DEQ and EPA concurrence, and notice placed in the Administrative Record.

Table 1. Buildings and structures proposed for general decommissioning.<sup>a</sup>

INL Site Bldg. ID	Name	Major Facilities	Small Facilities
CPP-1607	Automatic Foam Fire Prot. Bldg		X
CPP-1619	Haz Chem/Rad Waste Fac.		X
CPP-1634	Technology Dev. Facility		X
CPP-1635	Haz. Chemical Storage Facility		X
CPP-1636	Warehouse		X
CPP-1644	Bulk Chemical Unloading		X
CPP-1646	Anti-C Safety Handling		X
CPP-1649	Instrument Storage & Maintenance Facility		X
CPP-1651	Operations Training Facility		X
CPP-1653	Subcontractor's Warehouse		X
CPP-1656	Warehouse		X
CPP-1662	Remote Insp. Engr. Facility		X
CPP-1666	Engineering Support Office		X
CPP-1677	Change Room		X
CPP-1678	Contractors Lunch Room		X
CPP-1740	Camera Tower		X
CPP-1752	Camera Tower		X
CPP-1755	Cesspool for VES-CFE-6013		X
CPP-1759	Diesel Storage Tank Basin		X
CPP-601	Fuel Processing Building	X	
CPP-603A	Wet Fuel Storage Facility	X	
CPP-609	Cold Waste Facility Office		X
CPP-618	Tank Farm Measure/Control		X
CPP-619	Waste Storage Controlhouse		X
CPP-621	Chemical Storage Pumphouse		X
CPP-622	Tank Farm Instrument House		X
CPP-623	Tank Farm Instrument House		X
CPP-628	Tank Farm Controlhouse		X
CPP-632	Instrument House, Tank Farm Area		X
CPP-634	Waste Station WM-185		X
CPP-635	Waste Stations WM-187-188		X
CPP-636	Waste Stations WM-189/-190		X
CPP-638	Waste Station WM-180		X
CPP-640	Headend Process Plant	X	
CPP-645	Office Building		X
CPP-648	Tank Vault Building		X
CPP-651	Unirradiated. Fuel Storage Facility		X
CPP-653	Waste Handling Facility		X
CPP-654	Receiving Warehouse/Offices		X
CPP-656	Office Building		X



Table 1. (continued).

INL Site Bldg. ID	Name	Major Facilities	Small Facilities
CPP-660	Chem. & Haz. Material Storage		X
CPP-668	Engineering Support Offices		X
CPP-674	Utilities Replacement Enhancement Project (UREP) Substation #40		X
CPP-687	Coal-Fired Boiler House		X
CPP-688	Coal Plant Unload Bldg		X
CPP-689	Coal Plant Guard House		X
CPP-690	Coal Plant Storage Bldg		X
CPP-696	Coal Plant Offices		X
CPP-698	Morrison Knudsen (MK) Offices/Warehouse		X
CPP-699	Training/Prod. Office Bldg.		X
CPP-712	Bldg. Instrument House		X
CPP-727	Fluorinel Dissolution Process and Fuel Storage hydrogen fluoride (FAST HF) Acid Storage VES-CS-169		X
CPP-737	Condenser Pit/HE-WM-300		X
CPP-738	Cooling Water Pit/HE-WM-301		X
CPP-739	Condenser Pit for HE-WM-302		X
CPP-740	Settling Basin and Dry Well		X
CPP-743	Condenser Pit for HE-WM-387		X
CPP-755	Coal Storage Pad So CPP-687		X
CPP-758	MAH-STA-WQ-415		X
CPP-763	Tank Waste Vault VES-WM-191		X
CPP-764	SFE Hold Tank Vault		X
CPP-775	Fuel Oil Pump Shed, Coal Fired		X
CPP-776	Car Thaw Station, Coal-Fired		X
CPP-778	Elec. Substation, Coal-Fired		X
CPP-787	Stack Exhaust Tapered		X
CPP-788	Boiler Baghouse #1, Coal-Fired		X
CPP-789	Boiler Baghouse #2, Coal-Fired		X
CPP-792	Ash Silo, Coal-Fired		X
CPP-793	Limestone Silo, Coal-Fired		X
CPP-794	Coal Handling Dust Collector		X
CPP-TB-5	Unloading Station		X
CPP-TR-35	Office Trailer		X
MFC-774	ZPPR Control Room Equipment		X
MFC-776	ZPPR Reactor Cell Equipment		X
NRF-18A	S1W Spray Pond #1		X
PER-620	Reactor Building	X	
TAN-1729	Cask Storage Pad		X
TAN-1731	TAN 607A Substation		X

Table 1. (continued).

INL Site Bldg. ID	Name	Major Facilities	Small Facilities
TAN-1734	Emergency Generator Fuel Tank		X
TAN-1735	Emergency Generator Fuel Tank		X
TAN-1757	V-Tank Consolidation Yurt		X
TAN-603	Service Bldg/Steam Plant		X
TAN-607	Hot Shop/Manufacturing & Assembly	X	
TAN-611	Fuel Pump House		X
TAN-623	Sewage Pump House		X
TAN-655	Liquid Waste Lift Station		X
TAN-668	Heavy Equipment Cleaning		X
TAN-686	Office Trailer		X
TAN-704	Boiler Fuel Tank		X
TAN-711	Sewage Treatment Plant		X
TAN-717	Helicopter Pad		X
TAN-722	1500 kVA Substation		X
TAN-727	Covered Stairs, E. of TAN-607		X
TAN-733	Water Storage Tank		X
TAN-734	Exhaust Stack (TAN 607)		X
TAN-774	Concrete Slab		X
TAN-778	Water Blowdown Tank (Technical Support Facility [TSF])		X
TAN-790	Abnormal Waste Storage Pad		X
TAN-791	Spent Fuel Storage Pad		X
TAN-795	TAN Substation		X
TAN-TR-22	TAN 603 Change House		X
TAN-TR-23	TAN Landfill Trailer		X
TAN-TR-25	Loss of Fluid Test (LOFT) ICP Support Facility I (West)		X
TAN-TR-26	LOFT ICP Support Facility II (East)		X
TAN-TR-27	TSF ICP Support Facility I (West)		X
TAN-TR-28	TSF ICP Support Facility II (East)		X
TAN-TR-29	LOFT Decontamination and Decommissioning (D&D) Craft Trailer #2		X
TRA-603	Material Test Reactor Bldg.	X	
TRA-604	MTR Building Wing A		X
TRA-610	MTR Fan House		X
TRA-613	Weather Enclosure		X
TRA-613A	Pump Vault and Equipment		X
TRA-613B	Pump Vault and Equipment		X
TRA-626	Maintenance Storage Building		X
TRA-630	Catch Tank Pumphouse		X
TRA-635	Reactor Services Building		X

Table 1. (continued).

INL Site Bldg. ID	Name	Major Facilities	Small Facilities
TRA-642	Engineering Test Reactor Bldg.	X	
TRA-643	ETR Compressor Building		X
TRA-644	ETR Heat Exchanger Bldg		X
TRA-648	ETR Electrical Building		X
TRA-654	ETR Critical Facility		X
TRA-657	MTR Contaminated Storage and Enclosure		X
TRA-661	Reactor Wing South Extension		X
TRA-665	Neutron Chopper 20 Meter House		X
TRA-668	Reactor Wing North Extension		X
TRA-705	ETR Secondary Filter Pit		X
TRA-706	Delay Tanks		X
TRA-709	MTR Air Intake		X
TRA-710	MTR Stack & Monitoring Building		X
TRA-713B	Hot Waste Storage Tank		X
TRA-713C	Hot Waste Storage Tank		X
TRA-713D	Hot Waste Storage Tank		X
TRA-730	Catch Tanks Vault		X
TRA-755	ETR Filter Pit		X
TRA-761	Tank Truck Loading Facility		X
TRA-784	Liquid Nitrogen Tank		X
WMF-601	Radcon Field Office		X
WMF-603	Pumphouse		X
WMF-604	Change House & Lunch Room		X
WMF-605	Well House 87		X
WMF-609	Heavy Equip. Storage Shed		X
WMF-611	Operations Support Facility		X
WMF-619	Communication Building		X
WMF-620	Work Control Center, Trailer		X
WMF-621	Work Control Support, Trailer		X
WMF-622	Office Annex, Trailer		X
WMF-628	Type II Storage Module #1		X
WMF-637	Operations Control Building		X
WMF-639	Firewater Pumphouse #2		X
WMF-645	Construction Support Trailer		X
WMF-646	Field Support Trailer		X
WMF-648	Intermediate-Level Transuranic Storage Facility (ILTSF), Trailer		X
WMF-653	Office Annex #2, Trailer		X
WMF-655	Material Handling Facility		X
WMF-656	Maintenance Facility		X
WMF-657	Const Field Support, Trailer		X

Table 1. (continued).

INL Site Bldg. ID	Name	Major Facilities	Small Facilities
WMF-658	RWMC Office		X
WMF-661	Hazardous Material Storage		X
WMF-671	Weather Enclosure Structure (Glovebox Excavator Method )		X
WMF-680	Building Trailer		X
WMF-681	Building Trailer		X
WMF-682	Security Mobile Office Trailer		X
WMF-708	Sump Pit		X
WMF-709	Water Storage Tank #1		X
WMF-711	ASB-II Foundation, Floor & Airlock		X
WMF-714	ILTSF #1		X
WMF-720	ILTSF #2		X
WMF-727	Fire Water Tank		X
WMF-732	Propane Tank N WMF-637		X
WMF-733	Drum Inspection Station		X
WMF-736	Cold Test Pit		X
WMF-737	Gasoline Tank		X
WMF-738	Propane Tank		X
WMF-739	Well House, Observation 88		X
WMF-740	Well House, Observation 89		X
WMF-741	Well House, Observation 90		X
WMF-750	Temporary Fire Riser Bldg		X
WMFB25-601	Engineering Test Facility		X
<p>a. Highlighted buildings and structures are those subject only to decommissioning preparatory activities under the scope of this non-time critical removal action. See Section 1.</p> <p>CPP = Chemical Processing Plant (located at Idaho Nuclear Technology and Engineering Center).  ETR = Engineering Test Reactor.  ICP = Idaho Cleanup Project.  ID = identification.  INL = Idaho National Laboratory.  MFC = Materials and Fuels Complex.  MTR = Materials Testing Reactor.  NRF = Naval Reactors Facility.  PER = Power Excursion Reactor (located at Power Burst Facility).  RWMC = Radioactive Waste Management Complex.  TAN = Test Area North.  TRA = Test Reactor Area (located at Reactor Technology Complex).  TSF = Technical Support Facility.  WMF = Waste Management Facility (located at Radioactive Waste Management Complex).  ZPPR = Zero Power Physics Reactor.</p>			



## TAN-TSF Area Map

Figure 2. Area map of TAN-TSF with small facilities in yellow and major facilities in red.

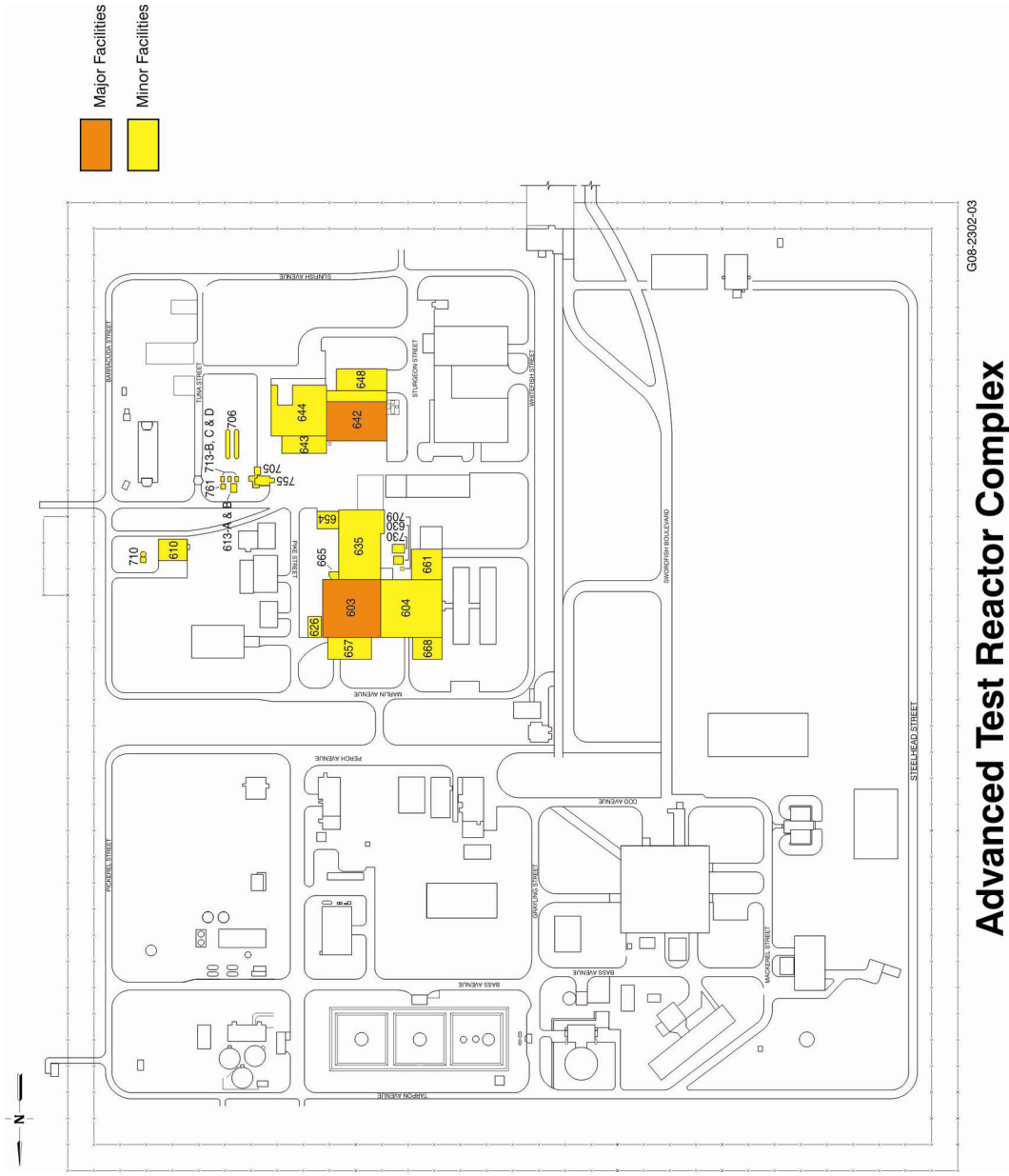
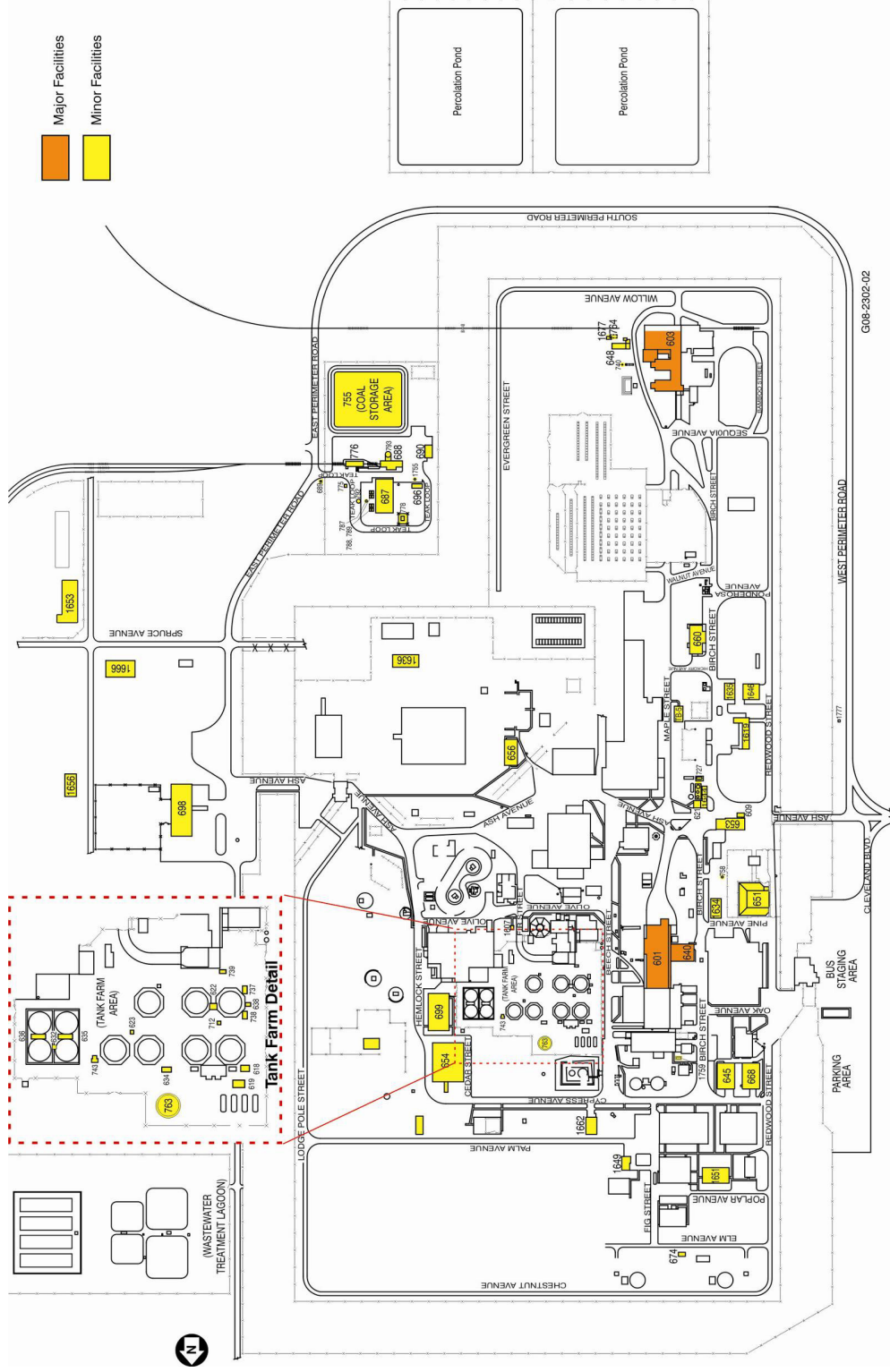


Figure 3. Area map of Advanced Test Reactor Complex with small facilities in yellow and major facilities in red.



# Idaho Nuclear Technology and Engineering Center

Figure 4. Area map of Idaho Nuclear Technology and Engineering Center with small facilities in yellow and major facilities in red.



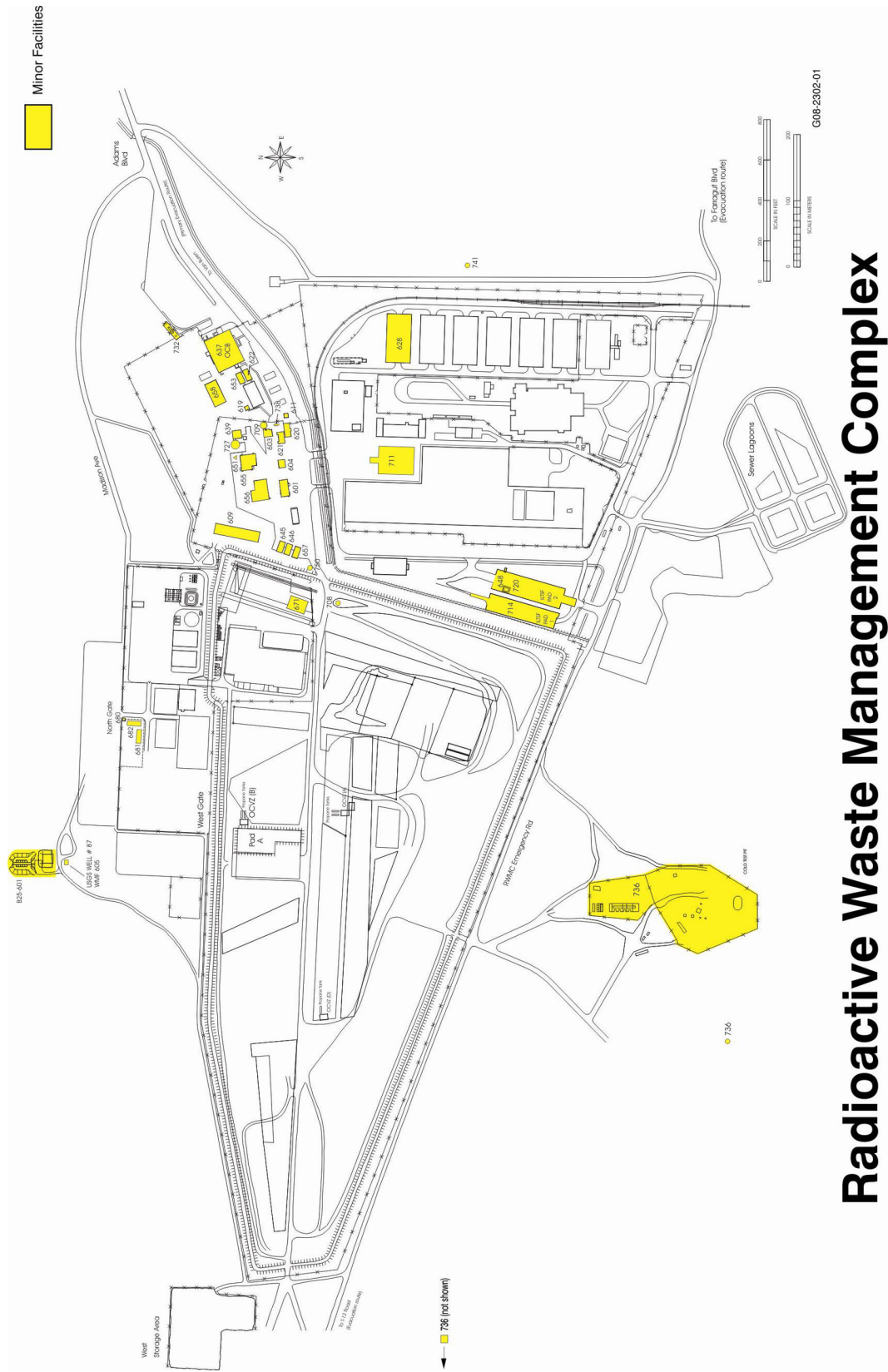


Figure 5. Area map of Radioactive Waste Management Complex with small facilities in yellow.



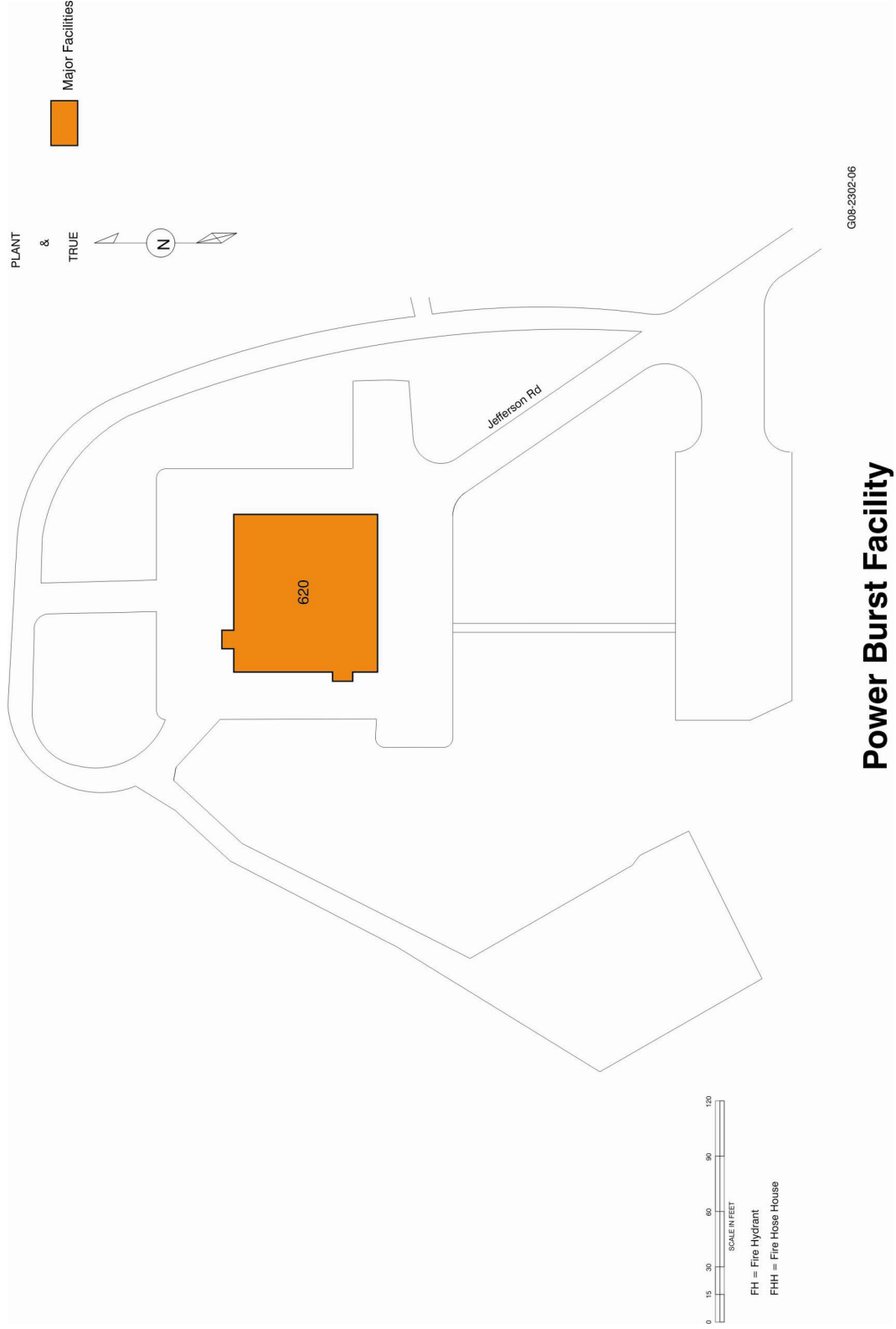


Figure 6. Area map of Power Burst Facility with major facilities in red.

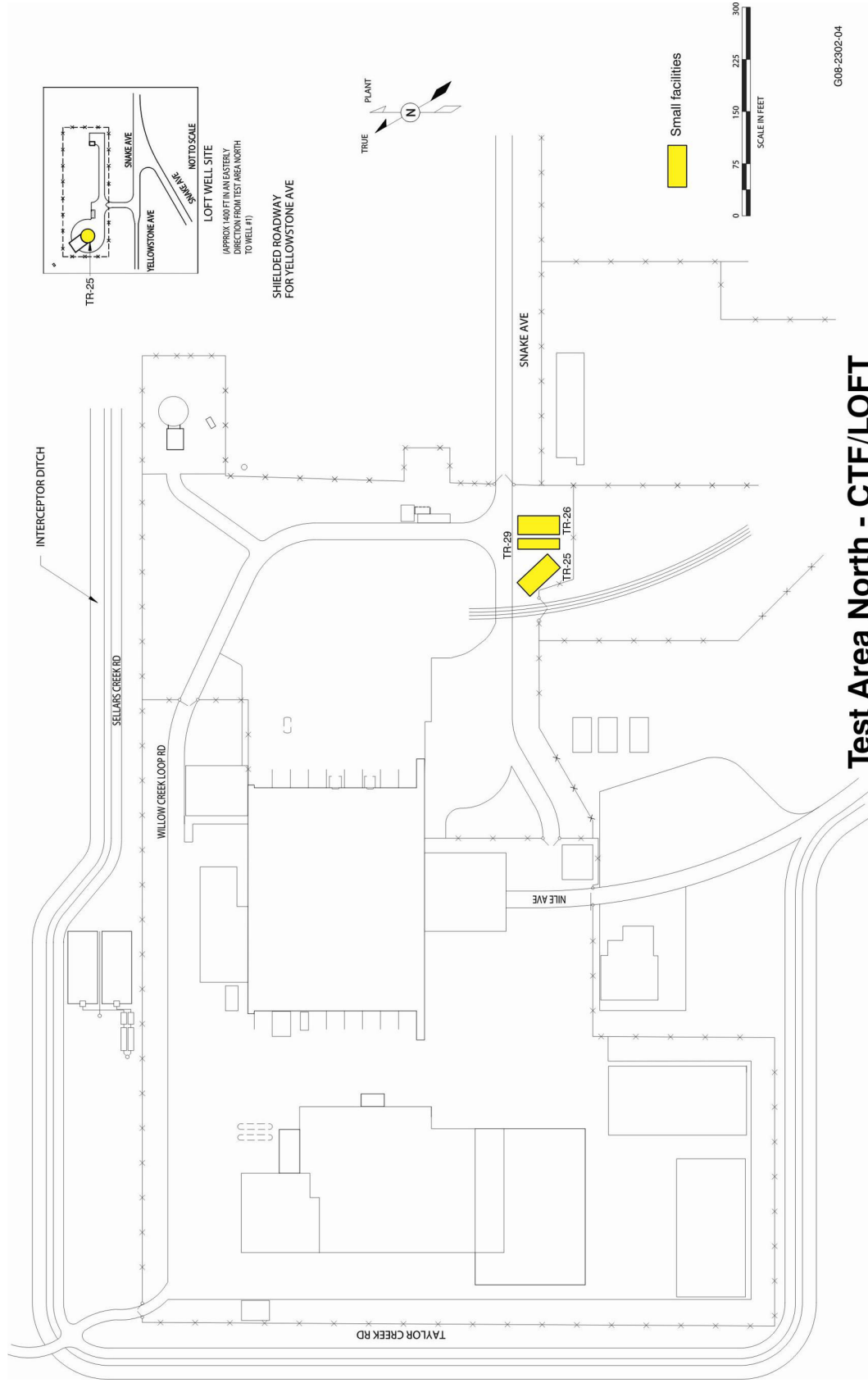
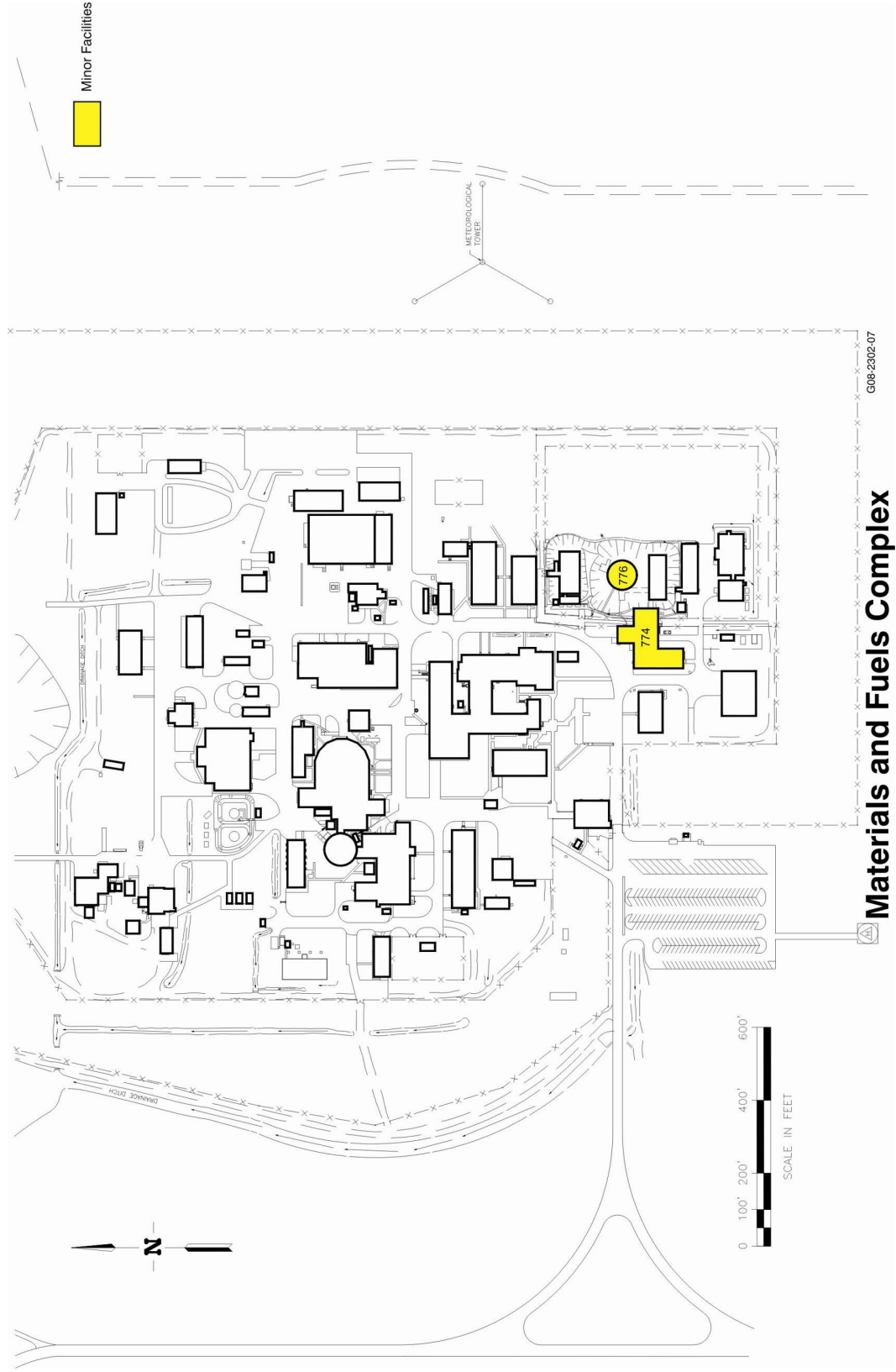


Figure 7. Area map of Test Area North – CTF/LOFT with small facilities in yellow.



## Materials and Fuels Complex

Figure 8. Area map of Materials and Fuels Complex with small facilities in yellow.

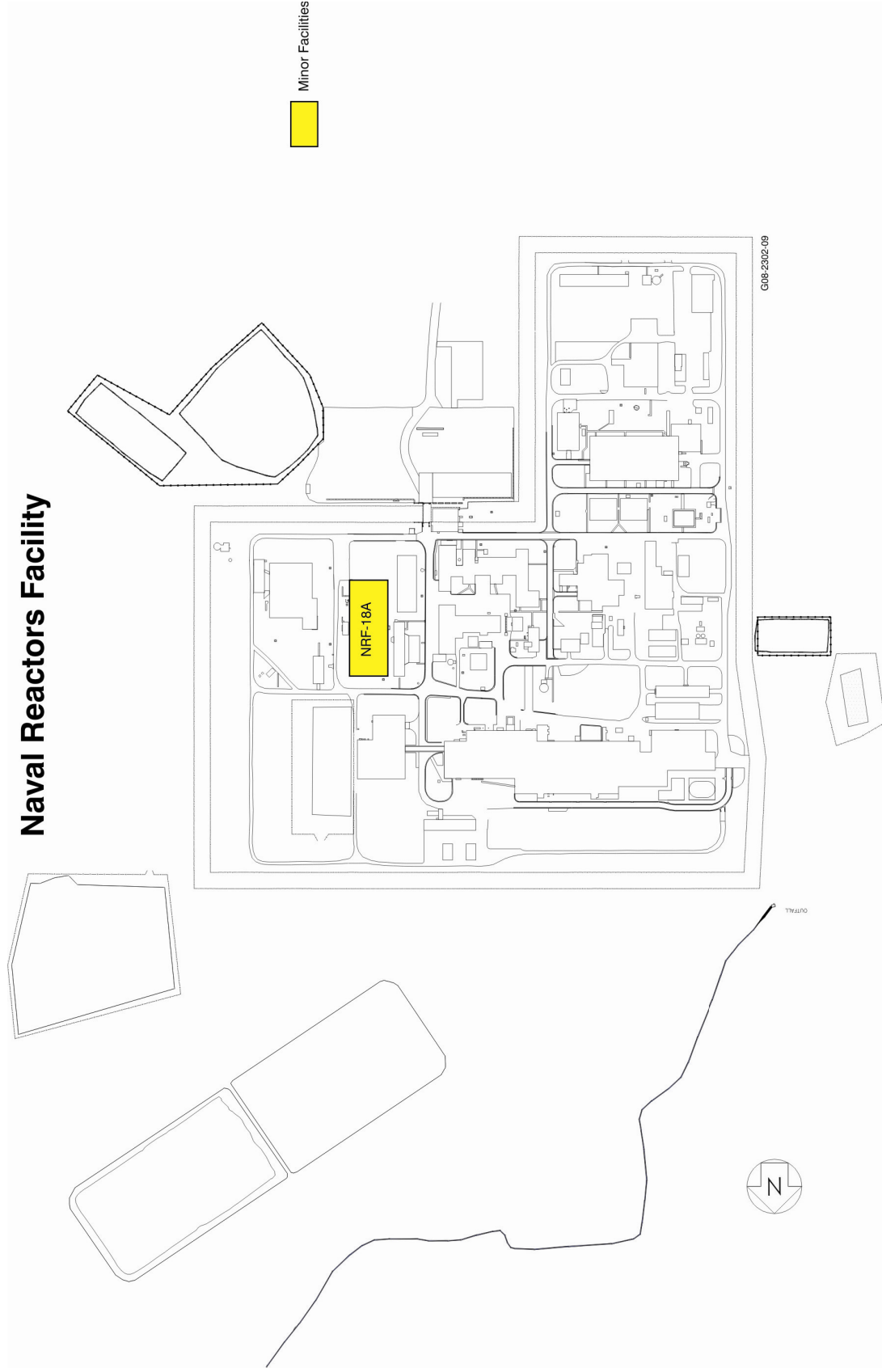


Figure 9. Area map of Naval Reactors Facility with small facilities in yellow.

## **2.2 Previous Closure/Cleanup Activities at the INL Site**

### **2.2.1 Comprehensive Environmental Response, Compensation, and Liability Act Activities at the INL Site**

The INL Site was added to the EPA's National Priority List of hazardous substances contaminated sites on November 21, 1989 (CERCLIS Identification Number 4890008952). On December 9, 1991, DOE-ID entered into the FFA/CO (DOE-ID 1991) to address the remediation of contaminated areas. The FFA/CO divided the INL Site into 10 waste area groups (WAGs) corresponding to the major facilities and areas at the Site. Comprehensive Records of Decision (RODs) have been signed for nine of the 10 WAGs. Remedial actions have been completed at WAGs 2, 4, 5, 6, 8, and 9. Remediation is ongoing at WAGs 1, 3, 7, and 10. The ROD is yet to be completed for Operable Unit (OU) 10-08.

Remedial actions have addressed the cleanup of various contaminated soils sites across the INL Site. Remedial action upon contaminated soils and buried wastes continues at INTEC, RWMC, and other soil contamination sites within the INL Site but outside of the individual facility boundaries. Long-term monitoring and institutional controls are required for soil contamination sites where residual contamination remains in place at concentrations exceeding risk-based concentrations for unrestricted use. Long-term groundwater monitoring is also conducted pursuant to the FFA/CO, and groundwater remediation activities continue at TAN.

This Action Memorandum authorizes the performance of general decommissioning activities at the INL Site as a non-time critical removal action under CERCLA. This memorandum supplements other action memoranda authorizing other CERCLA non-time critical removal actions for decommissioning activities that either have been or will be completed as part of the Idaho Cleanup Project for the INL Site. The other action memoranda authorizing performance of those activities are as follows:

- *Action Memorandum for Decommissioning of TAN-630 and TAN-650 at the Loss-of-Fluid Test (LOFT) Area*, March 2006, DOE/ID-11276 (DOE-ID 2006b)
- *Action Memorandum for Decommissioning of Test Area North (TAN)-607A*, September 2006, DOE/ID-11290 (DOE-ID 2006c)
- *Action Memorandum for Decommissioning of the Engineering Test Reactor Complex under the Idaho Cleanup Project*, February 2007, DOE/ID-11303 (DOE-ID 2007b)
- *Action Memorandum for Decommissioning of Test Area North (TAN)-607 Hot Shop Area*, June 2007, DOE/ID-11322 (DOE-ID 2007c)
- *Action Memorandum for Power Burst Facility Final End-State and PBF Vessel Disposal*, July 2007, DOE/ID-11331 (DOE-ID 2007a).
- *Action Memorandum for the Materials Test Reactor Facility End-State and Vessel Disposition*, August 2007, DOE/ID-11340 (DOE-ID 2007d)
- *Action Memorandum for the Non-Time Critical Removal Action at the CPP-603A Basins, Idaho Nuclear Technology and Engineering Center*, January 2005, DOE/NE-ID-11194 (DOE/NE-ID 2005b).
- *Action Memorandum for Decommissioning CPP-601/640 Fuel Reprocessing Facilities*, August 2008, DOE/ID-11360 (DOE-ID 2008c)

- *Action Memorandum for Phase 1 of the Decommissioning for the Power Burst Facility Reactor Building (PER-620)*, February 2005, DOE/NE-ID-11213 (DOE/NE-ID 2005a).

### **2.2.2 Voluntary Consent Order Activities**

A Voluntary Consent Order (VCO) between DOE-ID and DEQ was signed on June 14, 2000 (DEQ 2000). The VCO addresses legacy hazardous waste compliance issues at the INL Site. Actions required by the VCO have been completed at TAN, CFA, and PBF. VCO issues related to HWMA/RCRA tank systems at INTEC and RTC are yet to be completed.

## **3. THREAT TO PUBLIC HEALTH, WELFARE, AND/OR THE ENVIRONMENT**

The source of contamination at each of the buildings or structures addressed by this Action Memorandum depends on the specific operations conducted at the facility. In general, contamination at these facilities resulted from activities associated with research, testing, and processing of nuclear materials. Various resources were used to help identify the hazardous substances and nature and extent of contamination in the facilities. These resources included historical operations information, process knowledge, radiological survey reports, radiation occurrence reports, facility assessment reports, personnel interviews, facility characterization reports, vulnerability assessments, inspections, walkdowns, and knowledge of construction materials.

To the extent practicable, hazardous substances, including bulk chemicals that are no longer in use, have been, or will be, removed from the facilities during routine surveillance and monitoring (S&M) activities. However, residual contamination may remain on facility surfaces, in piping and ductwork, and in structural materials.

In general, the primary radionuclide COCs are the following:

- Americium-241
- Cesium-137
- Cobalt-60
- Strontium-90
- Plutonium isotopes
- Technetium-99
- Tritium
- Uranium isotopes.

At most of the buildings and structures, the activities of individual isotopes are not fully quantified but will be determined to support waste characterization. Additional radionuclides may be identified beyond the commonly encountered radionuclides listed above. In some cases, the data quality objectives process may be utilized to aid in characterization of the waste prior to disposal.

These buildings and structures also contain nonradioactive hazardous substances, as either contaminants from operations or components of structural materials. These include, but are not limited to, the following:

- Asbestos-containing material

- Cadmium
- Beryllium
- Lead
- PCBs
- Mercury
- Refrigerants
- Lubricants
- Solvents
- Corrosives
- High-efficiency particulate air (HEPA) filter media
- Sodium vapor and mercury vapor lighting.

At most of the buildings and structures, the activities/concentrations of individual hazardous substances are not yet fully identified but will be determined to support waste characterization. In some cases, the data quality objectives process may be utilized to aid in characterization of the waste prior to disposal. The buildings and structures addressed in this Action Memorandum may be contaminated with radioactive and/or nonradioactive hazardous substances. The risks associated with the radioactive and/or nonradioactive contaminants have not been quantified in detail. Consequently, only a qualitative discussion of the risks may be completed at this time.

The major COCs within the buildings and structures subject to this removal action are radionuclides, which are known carcinogens. While the levels of radioactive contamination in some of the buildings and structures may be significant, many of the facilities may have no contamination at all or have minor contamination on the surfaces or embedded in the structural material. As is typical with demolition of industrial structures, nonradiological hazardous substances, including asbestos insulation, heavy metals, and PCBs in building materials, are also present in the facilities.

The “National Oil and Hazardous Substances Pollution Contingency Plan,” 40 CFR 300.415(b)(2), establishes factors to be considered in determining the appropriateness of a removal action. Those factors include the following:

- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants
- Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released
- Hazardous substances or pollutants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release.

Conditions persist wherein threats to the public health or the environment exist. Hazardous substances, including radionuclides, are present or could be present within the equipment and structures. These substances pose an increasing threat of release to humans and ecological receptors as the facilities continue to deteriorate with age. Should contamination become exposed or structural integrity compromised, the potential increases for direct exposure of nearby personnel and the environment

(i.e., inhalation of contaminated dust and debris, or direct contact with contaminated debris). The potential for exposure to the public through the airborne spread of radioactive contaminants would also increase. The potential for wind or precipitation-related releases of hazardous substances within the facilities also increases as the facilities continue to deteriorate with age. The external radiation, inhalation, and ingestion risks to the Site workers, the public, and ecological receptors associated with potential releases of contamination justify a non-time critical removal action.

## **4. ENDANGERMENT DETERMINATION**

Security controls, including administrative and physical access controls, are currently in place for the INL to limit unauthorized entrance. Only authorized personnel are allowed entry into areas where hazards exist. As long as DOE-ID retains control of these areas, these institutional controls would prevent direct contact with and exposure to the hazardous substances. However, institutional controls will not prevent deterioration of the facilities or eliminate the threat of release of radiological and hazardous substances to the environment. Radiological and hazardous substances could be released directly to the environment via a breach in a pipe, containment wall, roof, or other physical control as the facilities age and deteriorate. Radiological and hazardous substances could also be released to the environment through animal intrusion into contaminated structures and systems. Historically, intrusion and spread of contamination by rodents, insects, birds, and other organisms has been problematic.

As the facilities continue to age, the threat of substantial release of radiological and hazardous substances increases with time, and containing these materials and preventing them from being released to the environment becomes more difficult. The S&M activities required to confine the hazardous substances may increase the risk of potential exposure to personnel. Comprehensive WAG RODs from these areas have demonstrated that historical releases from waste streams associated with these buildings and structures have presented an unacceptable risk to human health and the environment. In some cases, removal of these buildings and structures would accommodate access for remediation of these identified waste sites.

The potential exposure to workers and wildlife, the potential threat of future releases, the substantial risks associated with the radiological and hazardous substances at the facilities addressed by this Action Memorandum, and the risks associated with the waste sites beneath or adjacent to the facilities justify use of CERCLA removal action authority in accordance with Section 300.415(b)(2) of the “National Oil and Hazardous Substances Pollution Contingency Plan.” Therefore, actual and/or threatened releases of hazardous substances from these facilities have the potential to present a threat to public health and/or the environment.

### **4.1 Proposed Action**

The alternatives evaluated in the engineering evaluation/cost analysis (EE/CA) are discussed in Section 4.3. The proposed removal action alternative is Alternative 2 (Removal and Disposal of Buildings, Structures, and Building Contents). When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho HWMA/RCRA, these wastes will be addressed pursuant to requirements of those regulations. The scope of Alternative 2 is intended to encompass remaining miscellaneous decommissioning actions. The scope will further include decommissioning preparatory activities (for example, isolation of utilities, chemical removal, removal of piping and equipment) for the more substantial and significant facilities that either have been or will be addressed in future non-time critical removal actions. This Action Memorandum excludes the end-state decisions for these more substantial or significant facilities and decisions regarding respective reactor vessel disposition for these facilities and activities already identified under existing Action Memoranda or



remedial actions pursuant to the FFA/CO. Building contents include, but are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The types of wastes and debris likely to require disposal include, but are not limited to, solid waste, low-level radioactive waste, asbestos waste, and PCB-contaminated waste.

Wastes generated through implementation of Alternative 2 will be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the WAC of those facilities. For contaminated wastes generated during the decommissioning, the ICDF will be the preferred disposal location for wastes meeting the ICDF WAC. Demolition of buildings and structures will include removal of abovegrade structures. Belowgrade structures will be removed and disposed of in the same fashion as abovegrade buildings and structures. However, if belowgrade structures (including pipes and utility systems) are not contaminated or may be decontaminated to achieve RAOs and meet release criteria, they may optionally be left in place, backfilled, and brought to grade. Backfill will consist of clean fill materials and/or inert demolition waste from the abovegrade structures. If evidence of contamination to surrounding soils is encountered, those soils exceeding the RAOs may be excavated and disposed of at an appropriate on-Site or off-Site disposal facility in accordance with the WAC of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, the site may be identified by DOE-ID as a new site under the FFA/CO, with concurrence by the DEQ and EPA.

## 4.2 Removal Action Objectives

The potential COCs that may be encountered during the decommissioning include, but is not limited to, radionuclides, asbestos, heavy metals, and organic chemicals. General CERCLA protectiveness standards and RAOs are established in the individual WAG comprehensive RODs at INL. Completed comprehensive RODs where decommissioning of facilities will occur are available for TAN, RTC, INTEC, CFA, PBF, RWMC, NRF, and MFC. This section identifies the RAOs and goals for the activities associated with this non-time critical removal action. Although general decommissioning of miscellaneous INL buildings and structures is not specifically addressed in the comprehensive WAG RODs, these RAOs are consistent with those established by the comprehensive WAG RODs. The relevant completed comprehensive WAG RODs are

- *Final Record of Decision for Test Area North Operable Unit 1-10*, DOE/ID-10682 (DOE-ID 1999a)
- *Final Record of Decision Test Reactor Area Operable Unit 2-13*, DOE/ID-10586 (DOE-ID 1997), and *Explanation of Significant Differences to the Record of Decision for Test Reactor Area Operable Unit 2-13*, DOE/ID-10744 (DOE-ID 2000a)
- *Final Record of Decision Idaho Nuclear Technology and Engineering Center Operable Unit 3-13*, DOE/ID-10660 (DOE-ID 1999b)
- *Final Comprehensive Record of Decision Central Facilities Area Operable Unit 4-13*, DOE/ID-10719 (DOE-ID 2000b)
- *Record of Decision for the Power Burst Facility and Auxiliary Reactor Area, Operable Unit 5-12*, DOE/ID-10700 (DOE-ID 2000c)
- *Record of Decision for Radioactive Waste Management Complex Operable Unit 7-13/14*, DOE/ID-11359 (DOE-ID 2008b)

- *Final Record of Decision Naval Reactors Facility Operable Unit 8-08*, Document ID 10544 (DOE-IBO 1998)
- *Final Record of Decision Argonne National Laboratory-West Operable Unit 9-04*, W7500-000-ES-04 (DOE-CH 1998).

The RAOs for this non-time critical removal action are to perform the decommissioning of miscellaneous buildings and structures consistent with the comprehensive WAG RAOs to achieve the following:

- Prevent external exposure to COCs that would result in cumulative excess carcinogenic risks from multiple COCs to ensure risks remain less than 1 in 10,000 for a hypothetical resident 100 years in the future
- Prevent external exposure to COCs that would result in a hazard index greater than 1 for a hypothetical resident 100 years in the future
- Prevent future releases to the Snake River Plain Aquifer (SRPA) that would result in migration of contaminants to the aquifer such that Idaho groundwater quality standards may be exceeded and to ensure that cumulative excess carcinogenic risks due to groundwater ingestion from multiple COCs remain less than 1 in 10,000 for a hypothetical resident 100 years in the future
- Prevent unacceptable internal exposure to biota that would result in the lack of maintenance or recovery of healthy local populations/communities of ecological receptors that are or should be present at or near the site.

The removal action goals also are predicated on the current and future land uses established in the comprehensive WAG RODs, which generally include industrial land use until at least 2095 and the potential for residential land use thereafter. Actions conducted under this non-time critical removal action will be reviewed with DEQ and EPA for continued protectiveness during the Sitewide CERCLA 5-year review process prescribed under the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991).

### **4.3 Engineering Evaluation/Cost Analysis**

The *Engineering Evaluation/Cost Analysis for General Decommissioning Activities under the Idaho Cleanup Project* (DOE-ID 2006a) is available through the Administrative Record for the removal action and can be found at the following internet address: <http://ar.inel.gov>.

Three alternatives were considered for the general decommissioning activities to be performed: (1) No Action; (2) Removal and Disposal of Buildings, Structures, and Building Contents; and (3) Continued Surveillance and Monitoring Followed by Future Decommissioning. Alternative 2 (Removal and Disposal of Buildings, Structures, and Building Contents) consists of decontamination and demolition of the facilities and associated waste disposal. Alternative 3 (Continued Surveillance and Monitoring Followed by Future Decommissioning) included a period of facility maintenance and monitoring to the year 2095, followed by deactivation, decontamination, and demolition. Alternative 3 (Continued Surveillance and Monitoring Followed by Future Decommissioning) would have only delayed the start of decommissioning and would have required expenditures for the continued surveillance and monitoring over the interim.

#### **4.3.1 Alternative 1—No Action**

Alternative 1 assumed all short-term and long-term maintenance of the facilities was terminated and the facilities locked to prevent entry. Alternative 1 would not have eliminated, reduced, or controlled risks to human health and the environment. DOE-ID is required by federal orders and state and federal laws to protect workers and the public from unacceptable exposures. Therefore, the INL currently has administrative and physical controls in place to prevent unacceptable exposures to ionizing radiation and other chemical hazards from contaminated materials. DOE-ID could not have implemented a no action alternative (i.e., no administrative or physical controls) because it would put workers at risk and would not meet the requirements of federal orders and state and federal laws. Therefore, the No Action alternative was not considered a viable alternative.

#### **4.3.2 Alternative 2—Removal and Disposal of Buildings, Structures, and Building Contents**

The scope of Alternative 2 is intended to encompass remaining miscellaneous decommissioning actions. The scope will further include decommissioning preparatory activities (for example, isolation of utilities, chemical removal, removal of piping and equipment) for the more substantial and significant facilities that will be subsequently addressed in future non-time critical removal actions. This Action Memorandum excludes the end-state decisions for these more substantial or significant facilities and decisions regarding respective reactor vessel disposition for these facilities and activities already identified under existing Action Memoranda or remedial actions pursuant to the FFA/CO. Building contents include, but are not limited to, structural materials, pumps, pipes, tanks, boilers, compressors, ductwork, electrical components, and other equipment. The types of wastes and debris likely to require disposal include, but are not limited to, solid waste, low-level radioactive waste, asbestos waste, and PCB-contaminated waste.

When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho HWMA/RCRA, these wastes will be addressed pursuant to requirements of those regulations. Wastes generated through implementation of Alternative 2 will be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the WAC of those facilities. For contaminated wastes generated during the decommissioning, the ICDF will be the preferred disposal location for wastes meeting the ICDF WAC. Demolition of buildings and structures will include removal of abovegrade structures. Belowgrade structures will be removed and disposed of in the same fashion as abovegrade buildings and structures. However, if belowgrade structures (including pipes and utility systems) are not contaminated or may be decontaminated to achieve RAOs and meet release criteria, they may optionally be left in place, backfilled, and brought to grade. Backfill will consist of clean fill materials and/or inert demolition waste from the abovegrade structures. If evidence of contamination to surrounding soils is encountered, those soils exceeding the RAOs will be excavated and disposed of at an appropriate on-Site or off-Site disposal facility in accordance with the WAC of the facility. Alternatively, if the soil contamination is extensive, or unusually complex, the site may be identified by DOE-ID as a new site under the FFA/CO, with concurrence by the DEQ and EPA. If a site is included under the FFA/CO, the site would be subject to further investigation and a subsequent response action as necessary under the FFA/CO. Alternative 2 is the selected alternative by this Action Memorandum.

#### **4.3.3 Alternative 3—Continued Surveillance and Monitoring, Followed by Future Decommissioning**

Alternative 3 included a period of facility surveillance and monitoring to the year 2095, followed by deactivation, decontamination, and demolition. The year 2095 was used as the assumption for the period of continued S&M, since the timeframe is established in the comprehensive WAG RODs, which

include industrial land use until at least 2095 and the potential for residential land use thereafter. Alternative 3 would have only delayed the start of decommissioning and would have required expenditures for the continued surveillance and monitoring over the interim. The cost analysis only addressed the period of S&M through 2095 and did not include the future costs of the eventual decommissioning itself.

#### **4.4 Compliance with Environmental Regulations, Including Those That Are Applicable or Relevant and Appropriate Requirements**

Section 121 of CERCLA (42 USC § 9621) requires the responsible CERCLA implementing agency to ensure that the substantive standards of HWMA/RCRA and other applicable laws will be incorporated into the federal agency's design and operation of its long-term remedial actions and into its more immediate removal actions. DOE-ID is the implementing agency for this non-time critical removal action. Both DEQ and EPA concur that a non-time critical removal action is warranted to protect human health and the environment.

Table 2 lists the proposed ARARs that have been identified for this removal action. These ARARs are a compilation and expansion of the ARARs identified in the comprehensive WAG RODs. The ARARs list is based on several key assumptions:

- Any residual contamination left in place will meet the RAOs identified in Section 4.2.
- When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho HWMA/RCRA, these wastes would be addressed pursuant to requirements of those regulations.
- The majority of lead shielding will be removed from the buildings and structures subject to this Action Memorandum prior to initiation of the non-time critical removal action through other regulatory activities intended to place the facilities in an environmentally safe condition. However, some lead may remain following these activities, which may require management under the scope of the non-time critical removal action. Removed lead that constitutes hazardous waste and cannot be recycled or reclaimed shall be declared a hazardous waste or mixed low-level waste and will be disposed of at an off-Site disposal facility in accordance with the disposal facility WAC. Mercury located in mercury fluorescent lamps is planned for removal prior to this non-time critical removal action under other regulatory activities intended to place the facility in an environmentally safe condition, as would the mercury-containing electrical switches and lights.
- Activities performed under the auspices of the VCO will be conducted outside the scope of the non-time critical removal action.
- If decontamination liquids are generated, they will be disposed of at the ICDF evaporation ponds in accordance with the approved WAC. Debris generated during demolition of the buildings and structures may have paint that contains PCBs. PCB-containing light ballasts will be disposed of at an appropriate disposal facility. If encountered, such waste may trigger substantive requirements of the Toxic Substances Control Act (15 USC § 2601 et seq.). Lead-contaminated paint also may be removed, which would be subject to the requirements of RCRA hazardous waste regulations.
- Asbestos-containing material, which is both friable and nonfriable, will be encountered incidental to performance of the non-time critical removal action. Friable or regulated asbestos-containing material is subject to specific asbestos regulations and will be acceptable for disposal at the ICDF and/or, if not radiologically contaminated, at the CFA Asbestos Landfill. Regulated asbestos will

be removed and disposed of as required by 40 CFR 61.150, “Standard for Waste Disposal for Manufacturing, Fabricating, Demolition, Renovation, and Spraying Operations.”

## **4.5 Cultural Resources**

Section 106 of the National Historic Preservation Act of 1966 (NHPA) (16 USC § 470 et seq.), as amended, requires agencies to consider the impact of undertakings on properties listed or eligible for listing in the National Register of Historic Places and to consult with the Idaho State Historic Preservation Officer (SHPO) and other interested parties when impacts are likely. It also requires federal agencies to invite the Advisory Council on Historic Preservation (ACHP) to participate in consultation when impacts may be adverse. The NHPA Section 106 process has been tailored to meet the unique needs of the INL Site. Section 110 of the NHPA directs federal agencies to establish programs to find, evaluate, and nominate eligible properties to the National Register of Historic Places, including previously unidentified historic properties that may be discovered during the implementation of a project (36 CFR 800). In addition, the Archaeological Resources Protection Act of 1979 (16 USC § 470aa–470mm), as amended, provides for the protection and management of archaeological resources on federal lands. Procedures and strategies to tailor these requirements to the unique needs of the INL Site are described in the Cultural Resource Management Plan (CRMP) (DOE-ID 2007e). The CRMP is implemented through a Programmatic Agreement among DOE-ID, the Idaho SHPO, and the ACHP. Mitigation activities identified by the CRMP have been completed for the buildings and structures identified in Table 1.

DOE is required to review as guidance the most current U.S. Fish and Wildlife Service list for threatened and endangered plant and animal species. DOE-ID determined that none of the alternatives would impact any threatened and endangered species and also determined that formal consultation with the U.S. Fish and Wildlife Service is not required for this action.

## **4.6 Compliance with Disposal Facility Waste Acceptance Criteria**

Wastes generated through implementation of Alternative 2 will be dispositioned at appropriate on-Site or off-Site waste disposal facilities, in accordance with the WAC of those facilities. For wastes eligible for disposal as solid wastes, the INTEC CERCLA Demolition Waste Landfill or the CFA Industrial Waste Landfill will be utilized. For contaminated wastes generated during the decommissioning, the ICDF will be the preferred disposal location for wastes meeting the ICDF WAC.

The ICDF is a state-of-the art disposal facility designed and constructed with leachate collection and leak detection systems, with two 60-mil high-density polyethylene liners, and a 3-ft-thick clay bottom liner. The ICDF is an on-Site disposal facility that accepts CERCLA waste generated at the INL Site. Hazardous, mixed, low-level, asbestos, and Toxic Substances Control Act waste can be accepted for disposal at the ICDF (DOE-ID 2008a). Although the decommissioning to be performed under this non-time critical removal action is not expected to generate any waste packages exceeding the Class C criteria established for wastes regulated by the Nuclear Regulatory Commission, if a waste package with activated metals does exceed the Class C criteria, a special performance assessment will be performed and reviewed by the regulatory agencies to ensure that there are no unacceptable risks associated with disposal at the ICDF.

Table 2. Summary of applicable or relevant and appropriate requirements for the general decommissioning non-time critical removal action.

Requirement (Citation)	ARAR Type	Comments
<b>Clean Air Act and Idaho Air Regulations</b>		
“Toxic Substances,” IDAPA 58.01.01.161	A	Applies to any toxic substances emitting during implementation of the removal action.
<10 mrem/yr, “Standard,” 40 CFR 61.92	A	Applies to the waste-handling activities.
“Emission Monitoring and Test Procedures,” 40 CFR 61.93	A	Applies to the waste-handling activities.
“Compliance and Reporting,” 40 CFR 61.94(a)	A	Applies to the waste-handling activities.
“Standard for Demolition and Renovation,” and “Standard for Waste Disposal for Manufacturing, Fabricating, Demolition, Renovation, and Spraying Operations,” 40 CFR 61.145 and .150	A	Applies to any asbestos-containing materials removed during the decommissioning.
“Rules for Control of Fugitive Dust,” and “General Rules,” IDAPA 58.01.01.650 and .651	A	Applies to the waste-handling activities.
<b>Idaho Solid Waste Facilities Act</b>		
“Applicable Requirements for Tier II Facilities,” IDAPA 58.01.06.012	A	Applies to disposal of solid wastes at the TAN and CFA landfills.
<b>RCRA and Idaho Hazardous Waste Management Act</b>		
<i>Generator Standards:</i>		
“Standards Applicable to Generators of Hazardous Waste,” IDAPA 58.01.05.006, and the following, as cited in it:		
“Hazardous Waste Determination,” 40 CFR 262.11	A	Applies to waste that will be generated during the removal action.
<i>General Facility Standards:</i>		
“Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities,” IDAPA 58.01.05.008, and the following, as cited in it:		
“Temporary Units (TU),” 40 CFR 264.553	A	Waste may be treated or temporarily stored in a temporary unit prior to disposal.
“Staging Piles,” 40 CFR 264.554	A	Waste may be temporarily staged prior to disposal.
“General Inspection Requirements,” 40 CFR 264.15	A	Applies to a facility staging, storing, or treating hazardous waste prior to transfer to the ICDF or an off-Site facility.

Table 2. (continued).

Requirement (Citation)	ARAR Type	Comments
“Preparedness and Prevention,” 40 CFR 264, Subpart C	A	Applies to a facility staging, storing, or treating hazardous waste prior to transfer to the ICDF or an off-Site facility.
“Contingency Plan and Emergency Procedures,” 40 CFR 264, Subpart D	A	Applies to a facility staging, storing, or treating hazardous waste prior to transfer to the ICDF or an off-Site facility.
“Disposal or Decontamination of Equipment, Structures and Soils,” 40 CFR 264.114	A	Applies to contaminated equipment used to remove, treat, or transport hazardous waste.
“Use and Management of Containers,” 40 CFR 264.171-178	A	Applies to containers used during the removal and treatment of hazardous waste.
<i>Land Disposal Restrictions:</i>		
“Land Disposal Restrictions,” IDAPA 58.01.05.011, and the following, as cited in it:		
“Applicability of Treatment Standards,” 40 CFR 268.40(a)(b)(e)	A	Applies to hazardous waste and secondary waste, if treatment is necessary to meet the disposal facility’s WAC or if treatment is required before placement.
“Treatment Standards for Hazardous Debris,” 40 CFR 268.45	A	Applies to hazardous debris, if treatment is necessary to meet the disposal facility’s WAC or if treatment is required before placement.
“Universal Treatment Standards,” 40 CFR 268.48(a)	A	Applies to nondebris hazardous waste and secondary waste, if treatment is necessary to meet the disposal facility’s WAC or if treatment is required before placement.
“Alternative LDR Treatment Standards for Contaminated Soil,” 40 CFR 268.49	A	Applies to contaminated soil, if treatment is necessary to meet the disposal facility’s WAC or if treatment is required before placement.
“Standards for Universal Waste Management,” IDAPA 58.01.05.016		
“Standards for Large Quantity Handlers of Universal Waste,” 40 CFR 273, Subpart C	A	Applies to management of universal wastes.
<b>Idaho Groundwater Quality Rules</b>		
“Ground Water Quality Rule,” IDAPA 58.01.011	A	The waste-handling activities must prevent migration of contaminants from the reactor complex that would cause the SRPA groundwater to exceed applicable State of Idaho groundwater quality standards (same as maximum contaminant levels) in 2095 and beyond.

Table 2. (continued).

Requirement (Citation)	ARAR Type	Comments
<b>TSCA</b>		
“Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions,” 40 CFR 761	A	Applicable to removal, decontamination, storage, and disposal of items (including equipment) with PCB contamination.
<b>Biological and Cultural Resources</b>		
“Native American Graves Protection and Repatriation Regulations,” 43 CFR 10	A	Applies to remediation activities if Native American human remains or burial objects are discovered.
“Protection of Migratory Game and Insectivorous Birds,” 16 USC 7	A	Applies to disturbances of nesting migratory birds.
<b>To-Be-Considered Requirements</b>		
“Radiation Protection of the Public and the Environment,” DOE Order 5400.5, Chapter II(1)(a,b)	TBC	Applies to the decommissioning before, during, and after the removal action. Substantive design and construction requirements will be met to keep public exposures as low as reasonably achievable.
“Radioactive Waste Management,” DOE Order 435.1	TBC	Applies to the general decommissioning before, during, and after the removal action. Substantive design and construction requirements will be met to protect workers.
<i>Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities</i> (EPA 2006)	TBC	Applies to residual waste following completion of the removal action.
<p>A = applicable requirement; R = relevant and appropriate requirement; TBC = to be considered</p> <p>ARAR = applicable or relevant and appropriate requirement.</p> <p>CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act.</p> <p>CFR = <i>Code of Federal Regulations</i>.</p> <p>DOE = Department of Energy.</p> <p>EPA = Environmental Protection Agency.</p> <p>ETR = Engineering Test Reactor.</p> <p>ICDF = Idaho CERCLA Disposal Facility.</p> <p>IDAPA = Idaho Administrative Procedures Act.</p> <p>PCB = polychlorinated biphenyl.</p> <p>RCRA = Resource Conservation and Recovery Act.</p> <p>SRPA = Snake River Plain Aquifer.</p> <p>TSCA = Toxic Substances Control Act.</p> <p>WAC = waste acceptance criteria.</p>		



## 5. PROJECT SCHEDULE

This removal action is expected to begin the general decommissioning activities upon issuance of this Action Memorandum. Decommissioning of buildings listed in Table 1 is expected to be completed by September 30, 2012. However, as discussed in Section 1, the intent of this Action Memorandum is to allow the addition, or deletion, of buildings and structures to the scope of the removal action, as appropriate, and with DEQ and EPA concurrence. Because of the possibility that the scope may expand to accommodate additional buildings and structures, the schedule for completion of the non-time critical removal action will extend beyond 2012.

## 6. PROJECT COST

Cost estimates were prepared for the alternatives evaluated in the EE/CA (DOE-ID 2006a). The estimates were prepared in accordance with *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA 2000). Costs were calculated for both capital expenditures and future operation and maintenance expenses. In accordance with EPA guidance, the cost for the alternatives over time was calculated as present net worth costs, which are sometimes referred to as net present value, to represent the costs in 2006 dollars.

Under the selected alternative, because the management of HWMA/RCRA hazardous wastes is not included in the scope of this non-time critical removal action, disposal costs for these activities are not included in the cost estimates. The information in the cost estimate summary is based upon the best available information regarding the anticipated scope of the selected alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design and performance of the removal action. Major changes will be documented in the form of a memorandum placed into the Administrative Record file. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30% of actual project cost. The present-worth cost estimate for the selected alternative is \$41,193,000 (see Table 3). The costs are based on present-day (2006) dollars.

Table 3. Present-worth cost estimate for the selected alternative, by area.

TAN (Present-Worth)	RTC (Present-Worth)	INTEC (Present-Worth)	RWMC (Present-Worth)	Total Present-Worth Cost
\$6,761,000	\$18,115,000	\$15,367,000	\$9,035,000	\$41,193,000

## 7. EXPECTED CHANGE SHOULD ACTION BE DELAYED OR NOT TAKEN

The expected change to the general decommissioning of miscellaneous INL buildings and structures should action be delayed, or not taken, would be that the facilities would remain under administrative and institutional control, as they are today. However, as the facilities continue to age, the threat of substantial release of radiological and hazardous substances increases with time, and containing these materials and preventing them from being released to the environment become more difficult. The S&M activities required to confine the hazardous substances may increase the risk of potential exposure to personnel. If the action was delayed, continued expenditures for surveillance and maintenance costs would accrue during the time interval elapsed until final decommissioning activities are performed.

## **8. STATUTORY AND REGULATORY AUTHORITY**

The proposed removal action is being undertaken by DOE-ID, as the lead agency, pursuant to CERCLA, Section 104(a), and Executive Order 12580, as recognized by Section 5.3 of the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991). In accordance with 40 CFR 300.415(j) and DOE guidance, on-Site removal actions conducted under CERCLA are required to meet ARARs to the extent practicable considering the exigencies of the situation. The DOE-ID will comply with the ARARs and “to-be-considered” guidance as set forth in Section 4.4.

## **9. OUTSTANDING POLICY ISSUES**

There are no outstanding policy issues.

## **10. ENFORCEMENT**

DOE-ID is conducting this removal action as the lead agency under the authority of 40 CFR 300.5, “Definitions,” and 40 CFR 300.415(b)(1), “Removal Action.”

## **11. RECOMMENDATION**

This decision document represents the selected removal action alternative for implementation of general decommissioning activities and was prepared in accordance with CERCLA (42 USC § 9601 et seq.), as amended by the “Superfund Amendments and Reauthorization Act of 1986” (Public Law 99-499). The conditions at the buildings and structures listed in Table 1 meet the criteria in 40 CFR 300.415(b)(2) of the “National Oil and Hazardous Substances Pollution Contingency Plan” (40 CFR 300). This decision is based upon the Administrative Record for the removal action.

The recommended action is to perform Alternative 2. The selected alternative meets the proposed RAOs regarding long-term risk, minimizes short-term worker risk and radiation exposure, is cost-effective, and provides a safe and stable configuration that is environmentally sound. DOE-ID also considers Alternative 2 consistent with the RAOs of the comprehensive WAG RODs and compliant with ARARs.

## **12. PUBLIC PARTICIPATION**

The public participation period for the *Engineering Evaluation/Cost Analysis for General Decommissioning Activities under the Idaho Cleanup Project* (DOE-ID 2006a) was from September 9, 2006, through October 9, 2006. A public notice was sent to nine different Idaho and Wyoming newspapers on September 8, 2006. The notice was posted in the DOE Administrative Record electronically, and hard copies of the document were sent to the DOE Public Reading rooms in Idaho Falls and Boise. A presentation was provided to the INL Citizens Advisory Board on September 19, 2006, which was also open to participation from the general public. One letter regarding the EE/CA was received during the comment period and is included in Appendix A.

### 13. REFERENCES

- 36 CFR 800, 2004, "Protection of Historic Properties," *Code of Federal Regulations*, Office of the Federal Register, August 2004.
- 40 CFR 61.92, 2008, "Standard," *Code of Federal Regulations*, Office of the Federal Register, June 2008.
- 40 CFR 61.93, 2008, "Emission Monitoring and Test Procedures," *Code of Federal Regulations*, Office of the Federal Register, June 2008.
- 40 CFR 61.94, 2008, "Compliance and Reporting," *Code of Federal Regulations*, Office of the Federal Register, June 2008.
- 40 CFR 61.145, 2008, "Standard for Demolition and Renovation," *Code of Federal Regulations*, Office of the Federal Register, June 2008.
- 40 CFR 61.150, 2008, "Standard for Waste Disposal for Manufacturing, Fabricating, Demolition, Renovation, and Spraying Operations," *Code of Federal Regulations*, Office of the Federal Register, June 2008.
- 40 CFR 262.11, 2006, "Hazardous Waste Determination," *Code of Federal Regulations*, Office of the Federal Register, August 2006.
- 40 CFR 264.15, 2008, "General Inspection Requirements," *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.114, 2008, "Disposal or Decontamination of Equipment, Structures and Soils," *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.171, 2008, "Condition of Containers," *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.172, 2008, "Compatibility of Waste with Containers," *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.173, 2008, "Management of Containers," *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.174, 2008, "Inspections," *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.175, 2008, "Containment," *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.176, 2008, "Special Requirements for Ignitable or Reactive Waste," *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.177, 2008, "Special Requirements for Incompatible Wastes," *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.178, 2008, "Closure," *Code of Federal Regulations*, Office of the Federal Register, April 2008.

- 40 CFR 264.553, 2008, “Temporary Units (TU),” *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264.554, 2008, “Staging Piles,” *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264, Subpart C, 2008, “Preparedness and Prevention,” *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 264, Subpart D, 2008, “Contingency Plan and Emergency Procedures,” *Code of Federal Regulations*, Office of the Federal Register, April 2008.
- 40 CFR 268.40, 2008, “Applicability of Treatment Standards,” *Code of Federal Regulations*, Office of the Federal Register, June 2008.
- 40 CFR 268.45, 2008, “Treatment Standards for Hazardous Debris,” *Code of Federal Regulations*, Office of the Federal Register, June 2008.
- 40 CFR 268.48, 2008, “Universal Treatment Standards,” *Code of Federal Regulations*, Office of the Federal Register, June 2008.
- 40 CFR 268.49, 2008, “Alternative LDR Treatment Standards for Contaminated Soil,” *Code of Federal Regulations*, Office of the Federal Register, June 2008.
- 40 CFR 273, Subpart C, 2007, “Standards for Large Quantity Handlers of Universal Waste,” *Code of Federal Regulations*, Office of the Federal Register, July 2007.
- 40 CFR 300, 2008, “National Oil and Hazardous Substances Pollution Contingency Plan,” *Code of Federal Regulations*, Office of the Federal Register, October 2008.
- 40 CFR 300.5, 2008, “Definitions,” *Code of Federal Regulations*, Office of the Federal Register, October 2008.
- 40 CFR 300.415, 2008, “Removal Action,” *Code of Federal Regulations*, Office of the Federal Register, October 2008.
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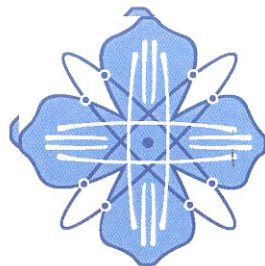




## **Appendix A**

### **Public Comments Received during the Comment Period**





# Snake River Alliance

IDAHO'S NUCLEAR WATCHDOG

October 6, 2006

Nolan R. Jensen  
Idaho Cleanup Project  
DOE Idaho Operations Office, MS 1222  
PO Box 1625  
Idaho Falls, Idaho 83403-9987

Re: Comments on the Engineering Evaluation/Cost Analysis for General  
Decommissioning Activities Under the Idaho Cleanup Project

Dear Mr. Jensen:

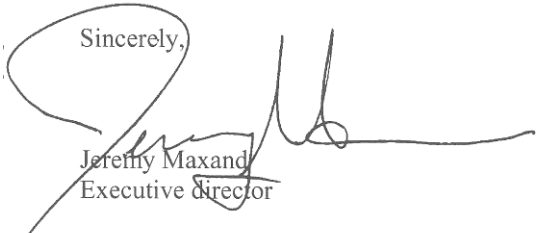
The Snake River Alliance is an Idaho-based grassroots group working through research, education, and community advocacy for peace and justice, the end to nuclear weapons, responsible solutions to nuclear waste and contamination, and sustainable alternatives to nuclear power. I submit the following comments on the **Engineering Evaluation/Cost Analysis for General Decommissioning Activities Under the Idaho Cleanup Project** on behalf of our dues-paying members and board of directors.

The Snake River Alliance encourages efforts to cease use of the unlined pit at the Radioactive Waste Management Complex. Folding D&D of the ancillary structures and some of the D&D preparatory steps of the more significant structures into CERCLA is one such effort, and we support it. We're certain our current support will not be read as carte blanche for unrestricted future use of the INL CERCLA Disposal Facility. CERCLA coverage should also satisfy another goal: active stakeholder involvement. We encourage ICP personnel to use all CERCLA tools—and go beyond them when necessary—to ensure the public is informed about the ongoing activities discussed in this EE/CA. For instance, the public should be informed about the (perhaps series of) decisions regarding what steps ICP will take to ensure an appropriate mix of debris and non-debris waste at ICDF.

Even if the project does not encounter unexpected challenges, we expect full regulatory agency involvement.

We appreciate ICP's willingness to discuss this project with us. We look forward to the information we requested about void spaces at the open, unlined RWMC pit and any future subsidence they might cause.

Sincerely,

  
Jeffrey Maxand  
Executive Director



## **Appendix B**

### **Concurrence Letters for Revision 1 of the Action Memorandum**





**Department of Energy**

Idaho Operations Office  
1955 Fremont Avenue  
Idaho Falls, Idaho 83401-1563

December 17, 2007

Mr. Larry Gadbois, Acting INL Project Manager  
U.S. Environmental Protection Agency, Region 10  
309 Bradley Blvd., Suite 115  
Richland, WA 99352

Mr. Daryl Koch, FFA/CO Manager  
Waste and Remediation Division  
Idaho Department of Environmental Quality  
1410 N. Hilton  
Boise, ID 83706

SUBJECT: Concurrence on Revision 1 of the Action Memorandum for General  
Decommissioning Activities under the Idaho Cleanup Project (DOE/ID-11293,  
Rev 1) (FMDP-RFDP-08-006)

Dear Mr. Gadbois and Mr. Koch:

Enclosed for your concurrence is the revised *Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project* (DOE/ID-11293, Rev 1, December 2006). This non-time critical removal action (NTCRA) is intended to simplify administrative processes for management of wastes generated during decommissioning. The potential for modifying the scope of the NTCRA subsequent to the signing of the Action Memorandum was addressed during the public review period of the *Engineering Evaluation/Cost Analysis for General Decommissioning Activities under the Idaho Cleanup Project* (DOE/ID-11291, August 2006). This provision is included in Section 1 of the Action Memorandum which states,

"ICP may be asked to decommission other INL buildings and structures with similar characteristics, contaminants, and complexity to those specifically identified in Section 2.1.10, Table 1. This Action Memorandum intends to allow the potential future inclusion of such buildings and structures under the scope of this NTCRA, as appropriate. If additional buildings and structures are added to the list in Table 1, concurrence from DEQ and EPA will first be obtained, and a letter will be placed in the Administrative Record for this NTCRA identifying the building or structure and explaining why it is sufficiently similar to the facilities specifically identified in this Action Memorandum and appropriate for inclusion under the scope of the NTCRA."

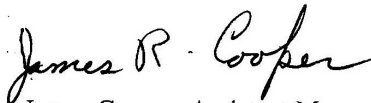
This Revision (Revision 1) of the Action Memorandum identifies four structures that have previously been added through separate correspondence, and additionally, includes eight more

structures that meet the criteria for inclusion. The revision provides new area summary information for the Materials and Fuels Complex and Naval Reactors Facility, and updates the status of other Action Memoranda signed for removal actions at INL and Records of Decision that have been signed since the initial version of the Action Memorandum. An update is also included for the facility maps and to Table 1. (List of Buildings and Structures).

The four facilities previously added are: CPP-648, Tank Vault Building; TRA-613, Weather Enclosure; TRA-761, Tank Truck Loading Facility; and NRF-18A, S1W Spray Pond #1. The eight facilities being added through approval of Revision 1 of the Action Memorandum are: TRA-613A, Pump Vault and Equipment; TRA-613B, Pump Vault and Equipment; TRA-713B, Hot Waste Tank; TRA-713C, Hot Waste Tank; TRA-713D, Hot Waste Tank; TRA-730, Catch Tanks Vault; MFC-774, Zero Power Physics Reactor Control Room; and MFC-776, Zero Power Physics Reactor Cell.

These structures are similar in "characteristics, contaminants, and complexity" to the other buildings initially identified for general decommissioning by Table 1, and are appropriate for inclusion under the scope of the NTCRA. Upon receipt of your concurrence with the revision, this letter, along with your concurrence letters, will be included as an Appendix to the Action Memorandum and the revised Action Memorandum will be posted to the Administrative Record. Please call Mark Shaw of my staff at 208-526-6442 if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink that reads "James R. Cooper". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

James Cooper, Assistant Manager  
Facility and Material Disposition  
Idaho Cleanup Project

Enclosure





**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10 HANFORD/INL PROJECT OFFICE**

309 Bradley Boulevard, Suite 115  
Richland, Washington 99352

December 19, 2008

James Cooper, Assistant Manager  
Facility and Material Disposition  
U.S. Department of Energy  
Idaho Operations Office  
1955 Fremont Avenue  
Idaho Falls, Idaho 83401-1563

Re: Request for Concurrence on Revision 1 of the Action Memorandum for General  
Decommissioning Activities under the Idaho Cleanup Project (DOE/ID-11293, Rev 1)  
(FMDP-RFDP-08-006)

Dear Mr. Cooper:

The U.S. Environmental Protection Agency (EPA) received the above document and your request for concurrence. EPA has reviewed the revision for addition of four sites to Table 1 that were previously added by letter; addition of eight new sites to Table 1 that will subsequently be decommissioned; addition of CERCLA WAGs 8 and 9, Naval Reactors Facility and Materials Fuel Complex, respectively; and an overall update of the text and site maps to reflect activities that have or will be conducted pursuant to this revised Action Memorandum. We concur with the revision.

Sincerely,

A handwritten signature in black ink, which appears to read "Larry Gadbois", is positioned above the typed name.

Larry Gadbois, Acting Program Manager  
INL Project

cc: Mark Shaw, DOE/ID  
Nicole Hernandez, DOE/ID  
Jim Floerke, CWI  
Scott Reno, CWI  
Mark Clough, DEQ  
Daryl Koch, DEQ  
Matt Wilkening, USEPA Boise  
Dennis Faulk, USEPA Region X



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

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DEC 22 2008

CCN 307900

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C.L. "Butch" Otter, Governor  
Toni Hardesty, Director

December 18, 2008

James Cooper, Assistant Manager  
Facility and Material Disposition  
Department of Energy  
Idaho Operations Office  
1955 Fremont Avenue  
Idaho Falls, Idaho 83401-1563

RE: Request for Concurrence on Revision 1 of the *Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project* (DOE/ID-11293, Rev 1) (FMDP-RFDP-08-006)

Dear Mr. Cooper:

We have received Revision 1 of the above named document and your request for concurrence letter of December 17, 2008. We have reviewed the revision for addition of four sites to Table 1 that were previously added by letter; addition of eight new sites to Table 1 that will subsequently be D & D; addition of CERCLA WAGs 8 and 9, Naval Reactors Facility and Materials Fuel Complex respectively; and an overall update of the text and site maps to reflect activities that have or will be conducted pursuant to this revised Action Memorandum. We hereby concur with the revision.

Sincerely,

Daryl F. Koch  
FFA/CO Manager  
Waste Management & Remediation Division  
Idaho Department of Environmental Quality

DFK/jc

cc: Mark Shaw, DOE/ID  
Nicole Hernandez, DOE/ID  
Jim Floerke, CWI  
Scott Reno, CWI  
Mark Clough, DEQ  
Matt Wilkening, USEPA Boise  
Dennis Faulk, USEPA Region X  
Larry Gadbois, USEPA Region X

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## **Appendix C**

### **Previous Addenda Letters for the Action Memorandum**





## Department of Energy

Idaho Operations Office  
1955 Fremont Avenue  
Idaho Falls, ID 83415

April 24, 2008

Nicholas Ceto, INL Project Manager  
EPA Region 10  
309 Bradley Landing, Suite 115  
Richland, WA 99352

Daryl F. Koch, FFA/CO Manager  
Waste Management and Remediation Division  
Idaho Department of Environmental Quality  
1410 North Hilton  
Boise, Idaho 83706-1255

SUBJECT: Addendum to Table 1 of the Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project – (EM-FMDP-08-010)

Dear Mssrs. Ceto and Koch:

The Idaho Cleanup Project (ICP) requests concurrence from DEQ and EPA for inclusion of buildings TRA-613, TRA-761, and CPP-648 with the list of structures to be decommissioned pursuant to the *Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project* (DOE/ID-11293, October 2006). This non-time critical removal action (NTCRA) is intended to simplify administrative processes for management of wastes generated during decommissioning. The potential for modifying the scope of the NTCRA subsequent to the signing of the Action Memorandum was addressed during the public review period of the *Engineering Evaluation/Cost Analysis for General Decommissioning Activities under the Idaho Cleanup Project* (DOE/ID-11291, August 2006). This provision to modify the list was memorialized in the Action Memorandum itself in Section 1., Statement of Basis and Purpose, which states,

“ICP may be asked to decommission other INL buildings and structures with similar characteristics, contaminants, and complexity to those specifically identified in Section 2.1.8, Table 1. This Action Memorandum intends to allow the potential future inclusion of such buildings and structures under the scope of this NTCRA, as appropriate. If additional buildings and structures are added to the list in Table 1, concurrence from DEQ and EPA will first be obtained, and a letter will be placed in the Administrative Record for this NTCRA identifying the building or structure and explaining why it is sufficiently similar to the facilities specifically identified in this Action Memorandum and appropriate for inclusion under the scope of the NTCRA.”

Buildings TRA-613 and TRA-761 are located in the southeastern portion of the Reactors Technology Complex (RTC), and building CPP-648 is located in the southwestern portion of the Idaho Nuclear Technology and Engineering Center (INTEC). Further descriptions of buildings TRA-613, TRA-761, and CPP-648 are provided in the enclosure. The descriptions explain why these buildings are similar in "characteristics, contaminants, and complexity" to the other buildings identified for general decommissioning by Table 1., and are appropriate for inclusion under the scope of the NTCRA.

Please note that the scope of the NTCRA excludes completion of activities covered by the Voluntary Consent Order (VCO), and the Action Memorandum states, "When the decommissioning involves management and/or generation of wastes subject to regulation under the Idaho Hazardous Waste Management Act/Resource Conservation and Recovery Act (HWMA/RCRA), these wastes will be addressed pursuant to the requirements of those regulations." Therefore, the removal, closure, and disposal of HWMA/RCRA hazardous waste at these buildings will not be performed under the scope of the NTCRA. The scope of activities to be performed subject to the NTCRA will include the removal and disposal of radiological and asbestos wastes, as described by the applicable or relevant and appropriate requirements (ARARs) identified in the Action Memorandum. Upon receipt of your concurrence with this determination, this letter and attachment, along with your concurrence letters, will be posted to the Administrative Record, and will serve as an addendum to Section 2.1.8, Table 1., of the Action Memorandum.

Sincerely,

Handwritten signature in blue ink that reads "J. R. Cooper for R. B. Provencher".

Richard B. Provencher, Deputy Manager  
Idaho Cleanup Project

Enclosure



## Descriptions of TRA-613, TRA-761, and CPP-648

### **TRA-613**

The TRA-613 metal weather enclosure is a prefabricated metal structure that was erected in the southeast portion of RTC in 1995 to prevent precipitation infiltration into the TRA-613 pump vaults. TRA-613 metal weather enclosure is located over an unreinforced concrete slab. The building is 22 ft 3 in by 47 ft 4 in by 9 ft tall with a sloped metal roof. The radiological inventory is associated with the pump vaults and piping, which are part of VCO system TRA-004. There is potential for radiological contamination associated with the metal weather enclosure itself. The TRA-613 metal weather enclosure is similar in characteristics, contaminants, and complexity to other structures currently subject to decommissioning under the general NTCRA at RTC, and the pump vaults managed wastes that originated from these other RTC buildings (e.g., TRA-603, TRA-604, and TRA-661).



Photograph of TRA-613.

### **TRA-761**

The Tank Truck Loading Facility (TRA-761) is part of the TRA Hot Waste Management System (Voluntary Consent Order system TRA-004). TRA-761 is located in the southeastern portion of RTC and is a reinforced concrete arch located over an unreinforced concrete slab with an adjacent steel staircase. TRA-761 is also equipped with a 1 ½" vent line and a separate 1 ½" transfer line that was used to fill tank trucks with hot waste. The hot waste within the TRA-004 tank system that required disposal was pumped from the TRA-613 pump vaults to TRA-761 via line 1 ½" HDA-613. Currently, line 1 ½" HDA-613 and its vent line are isolated from the TRA-613 pump vaults. TRA-761 is approximately 15.5-ft high by 21-ft wide by 10-ft thick with an opening that

is approximately 15.5-ft wide by 12-ft high. The structures' footings are approximately 5-ft below grade on undisturbed sand and gravel. The concrete slab below TRA-761 is approximately 15.5-ft by 20-feet wide. TRA-761 is similar in characteristics, contaminants and complexity to other structures identified in the general NTCRA. The source term for the 1 ½" HDA-613 and its vent line were obtained from EDF-7857 and are shown in the table below:

Source term for 1 ½"-HDA-613 and its vent line.

Radionuclide	Total Source Term (Ci)
Am-241	3.5E-10
Co-60	4.6E-06
Cs-137	3.3E-04
Fe-55	6.9E-08
Ni-59	1.7E-07
Ni-63	2.0E-07
Pu-238	3.9E-10
Pu-239	2.6E-10
Pu-240	2.6E-10
Pu-241	1.5E-08
Sr-90	2.4E-08
Te-99	2.0E-06
U-233	1.2E-09
U-234	1.2E-09
U-235	3.8E-11
U-238	8.3E-11
Total	3.3E-04



Photograph of TRA-761.



### **CPP-648**

CPP-648 is a single story abovegrade structure located in the southwestern portion of INTEC. The structure was constructed in 1957, with a footprint of approximately 16 ft by 21 ft. This building also has 2 below grade vault areas, the pump vault is 16 ft by 38 ft directly beneath the building structure, and the tank vault is 21 ft by 53 ft adjacent to the pump vault. This building houses the VES-SFE-106 tank system that was used to store characteristically hazardous wastes that were generated as a result of the CPP-603 spent nuclear fuel storage activities, including treatment of the basin water that provided radioactive shielding for the spent nuclear fuel. The abovegrade structure is constructed with corrugated transite panel walls and roof, supported by a structural steel frame. The below grade portions of the facility are constructed with poured reinforced concrete slab and house the VES-SFE-106 25,000-gal waste storage and treatment tank and associated piping system. The tank system and associated components are being closed under the State of Idaho Hazardous Management Act (HWMA) requirements and will be managed in accordance with the closure plan. CPP-648 is similar in characteristics, contaminants, and complexity to other structures at INTEC currently being decommissioned under the general NTCRA.



Photograph of CPP-648.



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10 HANFORD/INL PROJECT OFFICE**

309 Bradley Boulevard, Suite 115  
Richland, Washington 99352

May 1, 2008

Richard B. Provencher, Deputy Manager  
Idaho Cleanup Project  
U.S. Department of Energy  
Idaho Operations Office  
1955 Fremont Avenue  
Idaho Falls, Idaho 83415

Re: U.S. EPA Concurrence on Addendum to Table 1 of the Action Memorandum for General  
Decommissioning Activities under the Idaho Cleanup Project

Dear Mr. Provencher:

The U.S. Environmental Protection Agency concurs with the inclusion of buildings TRA-613, TRA-761, and CPP-648 to the list of structures planned for decommissioning under the 2006 Action Memorandum.

We appreciate that this additional scope to the non-time critical removal action will facilitate cleanup at the project and thank you for your efforts.

Sincerely,

A handwritten signature in black ink, appearing to read "Nicholas Ceto".

Nicholas Ceto, Program Manager  
INL Project

cc: Daryl Koch, DEQ



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

05-05-08 A10:31 IN

CCN 306768

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502

C.L. "Butch" Otter, Governor  
Toni Hardesty, Director

May 2, 2008

Richard B. Provencher, Deputy Manager  
Idaho Cleanup Project  
U.S. Department of Energy  
Idaho Operations Office  
1955 Fremont Avenue  
Idaho Falls, Idaho 83415

RE: Addendum to Table 1 of the Action Memorandum for General Decommissioning  
Activities under the Idaho Cleanup Project – (EM-FMDP-08-010)

Dear Mr. Provencher:

In response to your request, the Idaho Department of Environmental Quality concurs with the inclusion of buildings TRA-613, TRA-761, and CPP-648 with the list of structures to be decommissioned pursuant to the Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project (DOE/ID-11293).

If you have any questions or concerns please contact me at (208) 373-0492.

Sincerely,

A handwritten signature in cursive script that reads "Daryl F. Koch".

Daryl F. Koch  
FFA/CO Manager

DFK/jc

cc: Mark Clough, DEQ  
Nick Ceto, EPA Region X  
Matt Wilkening, EPA IOO  
Dennis Faulk, EPA Region X  
Tom Dieter, CWI  
Dave Hutchison, CWI  
Jim Floerke, CWI  
Chuck Ljungberg, DOE



## Department of Energy

Naval Reactors  
Idaho Branch Office  
P.O. Box 2469  
Idaho Falls, Idaho 83403-2469

NR:IBO-08/116

October 1, 2008

Daryl Koch  
FFA/CO Manager  
Department of Environmental Quality  
1410 North Hilton  
Boise, Idaho 83706

Nicholas Ceto, Program Manager  
INL Project Manager  
U.S. Environmental Protection Agency, Region 10  
309 Bradley Blvd., Suite 115  
Richland, Washington 99352

Subject: ADDENDUM TO TABLE 1 OF THE ACTION MEMORANDUM FOR  
GENERAL DECOMMISSIONING ACTIVITIES UNDER THE IDAHO  
CLEANUP PROJECT

Naval Reactors, Idaho Branch Office (NR/IBO) requests concurrence from the Idaho Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA) to include the SIW Spray Pond #1 (spray pond) to the list of structures to be decommissioned pursuant to the *Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project* (DOE/ID-11293). The Department of Energy, Idaho Operations (DOE-ID) has concurred with this recommendation as noted by their signature below.

The non-time critical removal action (NTCRA) addressed in the Action Memorandum is intended to simplify administrative processes for management of wastes generated during decommissioning. The *Engineering Evaluation/Cost Analysis for General Decommissioning Activities under the Idaho Cleanup Project* (DOE/ID-11291) addressed the potential for modifying the scope of the NTCRA and the Action Memorandum provided a provision to modify the NTCRA list of structures to be decommissioned as noted by the following statements in the memorandum,

*Furthermore, ICP may be asked to decommission other INL buildings and structures with similar characteristics,*

*contaminants, and complexity to those specifically identified in Section 2.1.8, Table 1. This Action Memorandum intends to allow the potential future inclusion of such buildings and structures under the scope of this NTCRA, as appropriate. If additional buildings and structures are added to the list in Table 1, concurrence from DEQ and EPA will first be obtained, and a letter will be placed in the Administrative Record for this NTCRA identifying the building or structure and explaining why it is sufficiently similar to the facilities specifically identified in this Action Memorandum and appropriate for inclusion under the scope of the NTCRA".*

Naval Reactors Facility (NRF) is located at the Idaho National Laboratory and has been designated as Waste Area Group (WAG) 8. The spray pond and associated portions of the fire protection system are presently designated as Site NRF-18A under Operable Unit 8-03 within this WAG. NRF-18A, described more fully in the NRF Final Record of Decision issued on September 30, 1998, is similar in characteristics, contaminants, and complexity to other structures identified in the general NTCRA.

The spray pond was constructed in 1953 and was used to cool circulating water from the S1W prototype plant from 1953 through 1989. Chemicals were added to the water used in the spray pond to inhibit corrosion, control pH, and prevent microbial growth. The original spray pond dimensions were 432 feet (prior to the demolition of the adjacent S1W Retention Basins) by 124 feet by approximately 4 feet deep with 12 inch thick concrete walls and a 4 inch thick concrete floor. (Photograph attached). The southern portion of the spray pond was an integral part of the S1W Retention Basin and was removed as part of previously completed remedial actions.


Sampling of the spray pond concrete has shown some low levels of cesium-137 in the concrete (less than 30 picocuries per gram). In addition, soil adjacent to the spray pond (Site NRF-80), which will be disturbed during spray pond deconstruction, contains low levels of cobalt-60 (less than 30 picocuries per gram). Sampling has not detected any hazardous constituents above regulatory levels; therefore, decommissioning of NRF-18A is not expected to involve management and/or generation of wastes subject to regulation under the Idaho Hazardous Waste Management Act or Resource Conservation and Recovery Act.

Daryl Koch, IDEQ  
Nicholas Ceto, EPA

NR:IBO-08/116  
September 2, 2008  
Page 3

As described above, WAG 8 Sites NRF-18A and NRF-80 are similar in characteristics, contaminants, and complexity to other structures identified in the general NTCRA and is appropriate for inclusion in Table 1 of the Action Memorandum.


Upon receipt of your concurrence with this determination, this letter and the attachment provided in letter NR:IBO-08/110 dated September 24, 2008, (Recommended Course of Action for the Disposition of the SIW Spray Pond #1), along with your concurrence letter, will be posted to the Administrative Record, and will serve as an addendum to Section 2.1.8, Table 1, of the Action Memorandum.



J. Roros  
Manager, Operations  
Naval Reactors Idaho Branch Office

Attachment:  
as stated

Concurred by:



Richard B. Provencher, Deputy Manager  
Idaho Cleanup Project  
U.S. Department of Energy Idaho Operations Office

*Based on Condition that volume of Material is  
approximately 1100 yd<sup>3</sup>.*



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**REGION 10 HANFORD/INL PROJECT OFFICE**  
309 Bradley Boulevard, Suite 115  
Richland, Washington 99352

November 4, 2008

Mr. J. Roros  
U.S. Department of Energy  
Naval Reactors Idaho Branch Office  
P.O. Box 2469  
Idaho Falls, Idaho 83403-2469

Mr. Richard B. Provencher, Deputy Manager  
Idaho Cleanup Project  
U.S. Department of Energy  
Idaho Operations Office, NE-ID  
1955 Fremont Avenue, MS 1222  
Idaho Falls, Idaho 83415

Re: Recommended Course of Action for the Disposition of S1W Spray Pond #1 at the Naval Reactor Facility (NRF)

Dear Mr. Roros and Mr. Provencher:

The U.S. Environmental Protection Agency (EPA) received the information on the S1W Spray Pond on September 26, 2008. In our previous letter of October 10, EPA agreed that the soil beneath Spray Pond #1 and portions of the NRF fire protection system could be reclassified as No Action Sites, i.e., institutional controls would no longer be required for these areas. This approach would be consistent with the Operable Unit (OU) 8-08 Record of Decision (ROD) which states that NRF-18A will remain a No Further Action site until additional data are available to more accurately assess it.

However, after further review of the data, the concentrations of cobalt-60 indicate potential risks to workers and future residents. Both detection concentrations are greater than the residential use scenario, and one is greater than an industrial use scenario (based on Oak Ridge National Lab values). EPA recommends that this potential risk to human health be addressed via a sodium-iodine scan of the area following the removal of the spray pond concrete. The data collected from this scan would be used to determine if the cobalt-60 poses a risk at the site or if the detection is very limited in area. EPA does agree with removing the residual contamination from CERCLA site NRF-80 A1W/S1W Radioactive Line as noted in the OU 8-08 ROD.

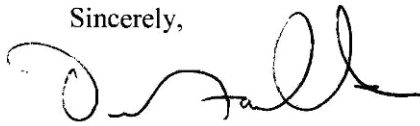
After review of the information and data provided in the documents, EPA concurs that using the INL Site-wide D&D Action Memo is the best administrative process to address the concrete rubble from the S1W Spray Pond and the adjacent soil, both of which are contaminated with radionuclides. The rationale behind this is that the Idaho National Lab is listed as one NPL

site and all waste area groups (WAGs) are part of the Federal Facility Agreement and Consent Order.

EPA recommends adding language to Section 2.1 of the Action Memo that provides a brief description of the Naval Reactor Facility and information on possible future actions at NRF as well as any other future WAGs that may be addressed via this Action Memo, such as the Material Fuels Complex (MFC). EPA concurs that the rubble and any associated soil should be disposed at the ICDF, provided the material meets the waste acceptance criteria.

If you have any questions or concerns, please contact Matt Wilkening, NRF project manager, at 208/378-5760.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Faulk', with a large, stylized initial 'D' and a long horizontal flourish extending to the right.

Dennis Faulk  
Acting INL Program Manager

cc: Pete Johansen, DEQ-HQ  
Matt Wilkening, EPA-IOO  
D. T. Sanderlin, DOE-Naval Reactors  
Mark Shaw, DOE-ID  
Daryl Koch, DEQ  
Administrative Record





STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502

C.L. "Butch" Otter, Governor  
Toni Hardesty, Director

November 5, 2008

J. Roros, U.S. D.O.E  
Naval Reactors Idaho Branch Office  
P.O. Box 2469  
Idaho Falls, ID 83403-2469

RE: Recommended Course of Action for the Disposition of S1W Spray Pond #1 at the  
Naval Reactors Facility

Dear Mr. Roros:

The Idaho Department of Environmental Quality (DEQ) has received the following submittals related to the removal of the S1W Spray Pond #1 at the Naval Reactors Facility (NRF) Waste Area Group 8 at the Idaho National Laboratory: the *Validated Soil Sample Results from the S1W Spray Pond #1* dated September 3, 2008; the *Recommended Course of Action for Disposition of S1W Spray Pond* dated September 24, 2008; and the *Addendum to Table 1 of the Action Memorandum for General Decommissioning Activities Under the Idaho Cleanup Project* dated October 1, 2008.

Based on our review of these documents, the DEQ concurs with the following:

- Soil samples collected from beneath and adjacent to the spray pond indicate that the remaining soil would pose no unacceptable risk to human health and the environment following the spray pond removal.
- Spray Pond #1 (Site NRF-18A) and portions of the NRF fire protection system should be designated as No Action sites.
- NRF should remove the residual contamination from the A1W/S1W Radioactive Line near Butler Building 19 (Site NRF-80).
- *Action Memorandum for General Decommissioning Activities under the Idaho Cleanup Project* (DOE/ID-11293) should be revised by adding the spray pond structure to Table 1. The spray pond closely resembles other INL structures currently identified in the Action Memorandum and removal of the structure would meet NRF's previously identified Remedial Action Objectives.

J. Roros, U.S. D.O.E  
November 5, 2008  
Page Two

In addition, the Action Memorandum will need to be revised to include NRF in the *Background and Facility Descriptions*, and references to prior NRF Records of Decision, this task to be accomplished by DOE-ID.

Please contact at (208) 373-0230 if you have any questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Pete Johansen", with a stylized, flowing script.

Pete Johansen, Waste Science Officer  
Waste Management and Remediation Division

PJ/jc

cc: Matt Wilkening, EPA-IOO  
Daryl Koch, FFA/CO Manager, IDEQ  
Dave Sanderlin, DOE-Naval Reactors  
Richard Provencher, Deputy Manager, DOE-ID  
Mark Shaw, DOE-ID